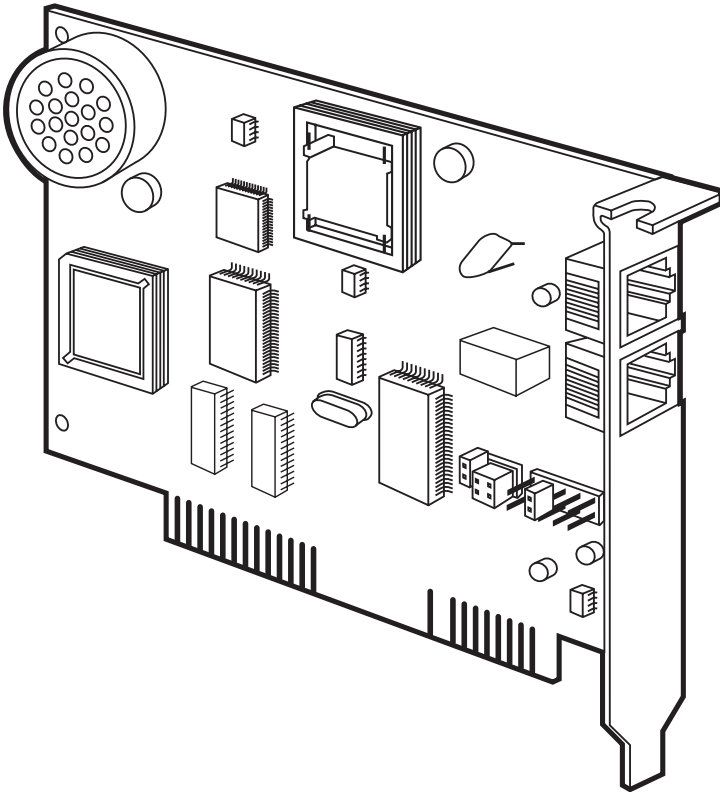




## Speedster 288 Internal Fax/Modem



**CUSTOMER  
SUPPORT  
INFORMATION**

Order toll-free in the U.S. 24 hours, 7 A.M. Monday to midnight Friday: 877-877-BBOX  
FREE technical support, 24 hours a day, 7 days a week: Call 724-746-5500 or fax 724-746-0746  
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### **TRADEMARKS USED IN THIS MANUAL**

MNP is a registered trademark of Microcom Systems, Inc.

Windows is a registered trademark of Microsoft Corporation.

UL is a registered trademark of Underwriters Laboratories Incorporated.

*All applied-for and registered trademarks are the property of their respective owners.*

**FEDERAL COMMUNICATIONS COMMISSION  
AND  
INDUSTRY CANADA  
RADIO FREQUENCY INTERFERENCE STATEMENT**

**Class B Digital Device.** This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular 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. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one 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 an experienced radio/TV technician for help.

**Caution:**

**Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.**

To meet FCC requirements, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

*This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.*

*Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.*

See the bottom of your modem board for the FCC ID code and the FCC 68 number.

Ringer Equivalence: 0.4B

**NORMAS OFICIALES MEXICANAS (NOM)  
ELECTRICAL SAFETY STATEMENT**

**INSTRUCCIONES DE SEGURIDAD**

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

### **UL LISTING/CSA APPROVAL**

This equipment is UL® listed and CSA approved for the uses described in this manual.

### CABLE REQUIREMENTS

The connection from the modem to the computer must be made with a high-quality, shielded cable to ensure compliance with FCC limits.

### CONNECTING TO THE TELEPHONE COMPANY

It is not necessary to notify the telephone company before installing the modem. However, the telephone company may request the telephone number(s) to which the Speedster 288 is connected and the FCC information.

Be sure that the telephone line you are connecting the modem to is a standard analog line and not a digital (PBX), party, or coin telephone line.

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

### FOR CANADIAN MODEM USERS

**NOTICE:** The Industry Canada (IC) label identifies certified equipment. This certification means the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single-line, individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware 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 the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection 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.

**CAUTION:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to the telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices, subject only to the requirement that the total of the Load Numbers of all the devices not exceed 100.

The Load Number is located on the bottom of your modem.

**AVIS:** L'étiquette d'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Toutefois, le Ministère n'assure pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit assurer qu'il soit permis de le raccorder aux installations de l'entreprise locale de télécommunications. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. Dans certains cas, les fils intérieurs de l'entreprise utilisés pour un service individuel à ligne unique peuvent être prolongés au moyen d'un dispositif de raccordement homologué (cordon rallonge téléphonique interne). L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêchent pas la dégradation du service dans certaines situations. Actuellement, les entreprises de télécommunication ne permettent pas que l'on raccorde leur matériel à des jacks d'abonné, sauf dans les cas précis prévus par les tarifs particuliers de ces entreprises.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur, ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, soient raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

## SPEEDSTER 288 INTERNAL FAX/MODEM

**AVERTISSEMENT:** L'utilisateur ne doit pas tenter de faire ces raccordements lui-meme; il doit avoir recours aux services d'un électricien.

L'indice de charge (IC) assigné à chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui peut être raccordée à un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut être constituée de n'importe quelle combinaison de dispositifs, pourvu que la somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 100.

L'indice de charge se trouve sur le modem.



# Contents

Chapter	Page
1. Specifications .....	10
2. Introduction .....	11
2.1 Description .....	11
2.1.1 How a Modem Works .....	11
2.1.2 How Your Speedster 288 Internal Fax/Modem Works .....	11
2.2 Package Contents .....	12
2.3 What You'll Need .....	12
3. Installation .....	13
3.1 Plug and Play Installation .....	13
3.1.1 If You Are Using Plug and Play .....	14
3.1.2 If You Are Not Using Plug and Play .....	15
3.2 Installing the Modem .....	16
3.3 Configuring with Windows 95 .....	18
3.4 Installing Your Software .....	19
4. Communications Software .....	20
4.1 Configuring Your Modem .....	20
4.2 Configuring Your Software .....	20
4.3 Testing Your Installation .....	21
5. Commands .....	22
5.1 Typing in Commands .....	22
5.2 AT Commands .....	23
5.3 S-Registers .....	31
6. Troubleshooting .....	40
6.1 Before the Modems Connect .....	40
6.2 During Data Transfer .....	41
6.3 Calling Black Box .....	44
6.4 Shipping and Packaging .....	44

# 1. Specifications

**Standards Supported** — Bell 103/V.21, Bell 212A/V.22, ITU-TSS Group III fax, V.22 bis, V.32 bis, V.34, V.32, V.23, V.FC, V.34+, V.25, V.27, V.29, V.42, V.42 bis

**Modem Data Rate** — 33.6 Kbps

**Operation** — Full duplex

**Compliance** — UL, FCC Class B, CSA

**Ringer Equivalency** — 0.4B

**Diagnostics** — Standard AT&T0 through AT&T8 commands

**Connectors** — (2) RJ-11: Phone and Line

**Error Correction** — MNP<sup>®</sup> 2 through 5; V.42/42 bis

**Command Mode** — AT Commands

**Modem Type** — Data/Fax

**Line Type** — 2-wire dial

**Clocking** — Asynchronous

**Fax Class Type** — V.17, V.29, V.27 Group III

**Fax Operation** — 2-wire half-duplex

**Fax Rate** — 14.4 Kbps

**Operating Temperature** — 32 to 113°F (0 to 45°C)

**Operating Humidity** — 10 to 85%, noncondensing

**Power Source** — PC bus

**Size** — Half card

## 2. Introduction

### 2.1 Description

#### 2.1.1 HOW A MODEM WORKS

A modem is a computer peripheral that allows you to communicate with other computers via telephone lines. Because ordinary telephone lines cannot carry digital information, a modem changes the digital data from your computer into analog signals, which can be transmitted much like voice signals. In a similar manner, the modem receiving the call then changes the analog signals back into digital data that the receiving computer can understand. This shift of digital data into analog signals and back again allows two computers to “speak” with one another. Called *modulation/demodulation*, this transformation of data and signals is how the modem received its name.

#### 2.1.2 HOW YOUR SPEEDSTER 288 INTERNAL FAX/MODEM WORKS

The Speedster 288 offers a range of internationally accepted standard modulation methods and protocols. It uses hardware-based V.42/MNP 2-4 error control and V.42 bis/MNP 5 data compression.

The Speedster 288 will transmit at speeds up to 33,600 with throughput to 115,200 bps. It’s universally compatible with V.34, V.34+, V.FC, V.32 bis, V.32, V.22 bis, Bell 212A/V.22, V.23, V.25, and Bell 103/V.21 modems.

You can also use your modem with Class 1 or Class 2.0 fax software to exchange faxes with Group III fax machines worldwide at speeds up to 14,400 bps.

### 2.2 Package Contents

- The Speedster 288 Internal Fax/Modem
- This manual
- The RJ-11 telephone cord (a standard phone cord)
- The QuickLink II software (3.5-inch disk)
- The QuickLink II fax/data communications manual

### 2.3 What You'll Need

In addition to everything you received in the Speedster 288 package, you'll need:

- An open 8- or 16-bit expansion slot (8-bit preferred) that can accept a 5.9-inch board.
- A 3.5-inch floppy-disk drive.
- A Phillips-head screwdriver or a 1/4-inch hex screwdriver (depending on the type of screws used on your computer's cover).
- An *analog* telephone line. This is the standard telephone line most homes have.

### **WARNING!**

**The modem will be damaged if you use a digital phone.**

**Since some homes and most businesses have digital lines, before plugging your Speedster 288 into a jack you're unsure about (a jack at work, for example), ask the person in charge of the phone system if the line is digital.**

## 3. Installation

### 3.1 Plug and Play Installation

Your new modem features Plug and Play installation, the fastest, easiest way to add new devices to your PC.

Plug and Play allows a computer to configure the modem's settings automatically. Your computer sets the optimal configuration for the modem and your software applications automatically adjust to that configuration.

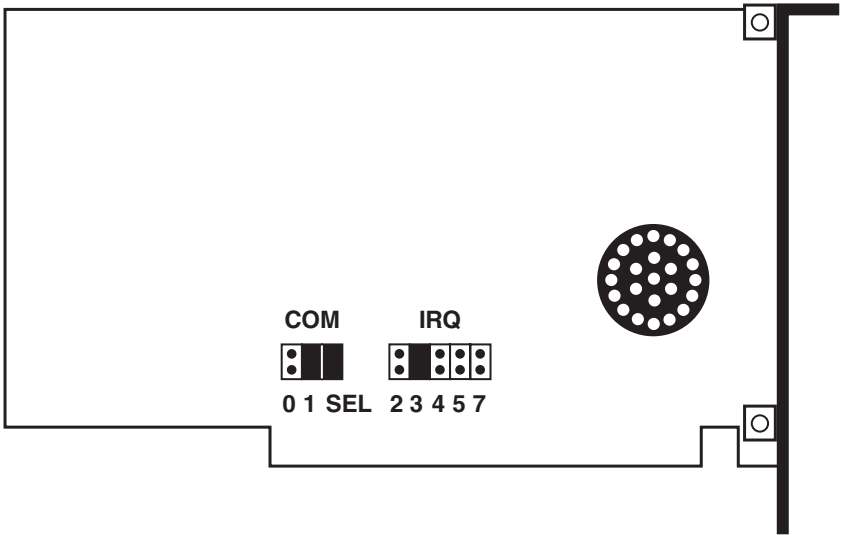
Most newer computers support Plug and Play. If yours doesn't, you'll have to make some simple adjustments; see **Section 3.1.2**.

Consult your software manual or computer manufacturer to see whether your system supports the Plug and Play features.

Once your system sets the configuration, it will use this configuration every time you turn on your machine.

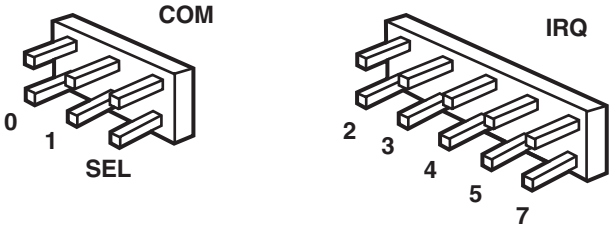
In order to activate the Plug and Play feature with your modem, you must take off all the contacts on the COM port and IRQ jumpers on the modem. You will be able to tell which COM port your modem has been set to by having your communications software search for the COM port.

Using the figure on the next page, find where the COM port and IRQ jumpers are located on your modem.



### 3.1.1 IF YOU ARE USING PLUG AND PLAY

Take off all of the connections on the COM port and IRQ jumpers. Your jumpers should look like the illustration below.

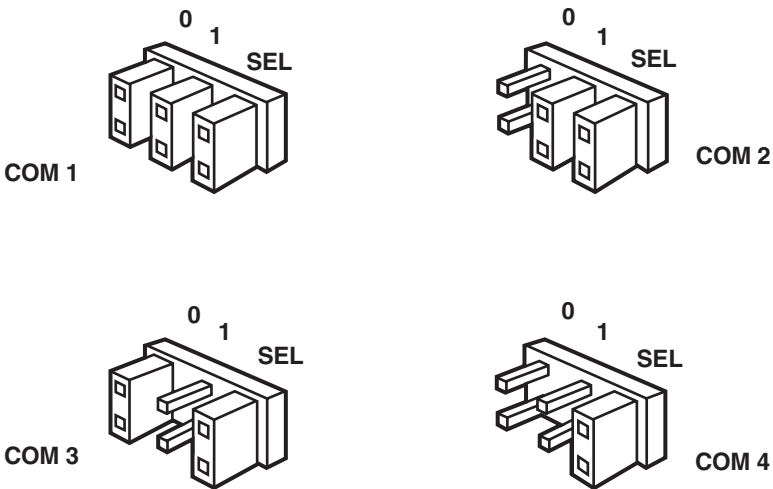


**3.1.2 IF YOU ARE NOT USING PLUG AND PLAY**

Your modem was shipped with jumpers set at COM 2 and IRQ 3. (See the illustration of the board on the previous page.)

To change the settings on your modem, lift the black plastic pieces and place them on the contacts to match the desired settings. Reboot your computer after reinstalling the modem with the changed jumpers.

To change the COM port, the jumpers should be set as follows:



The following is a list of recommended combinations of COM port and IRQ settings when not using Plug and Play:

COM 1, IRQ 4  
 COM 3, IRQ 4

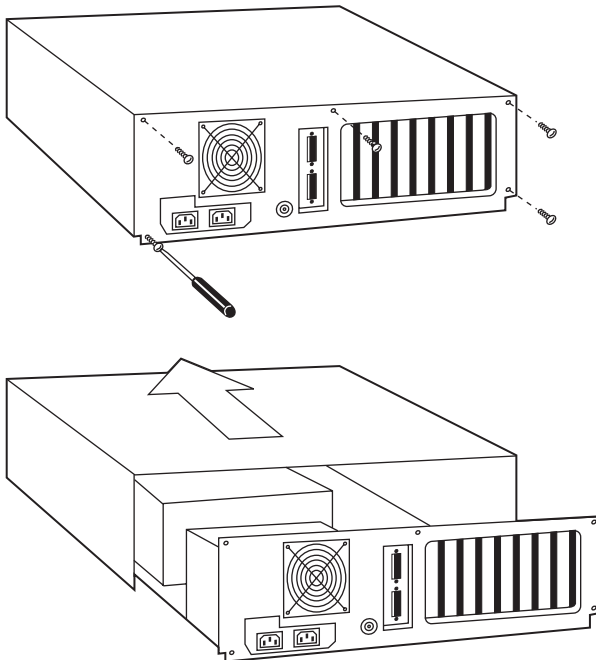
COM 2, IRQ 3  
 COM 4, IRQ 3

## 3.2 Installing the Modem

1. Before installing your modem, write your modem's serial number on the cover of this manual. You can find the serial number on the white sticker under the bar code on the modem and on the outside of the box.
2. Turn off and unplug your computer and any peripheral devices, such as a printer.
3. Remove the computer's cover. Refer to the computer manual, if necessary, to see which rear-panel screws to remove before sliding the cover off.

### NOTE

Your modem may look different from the modem in the illustrations in this chapter. However, all internal modems are installed similarly.

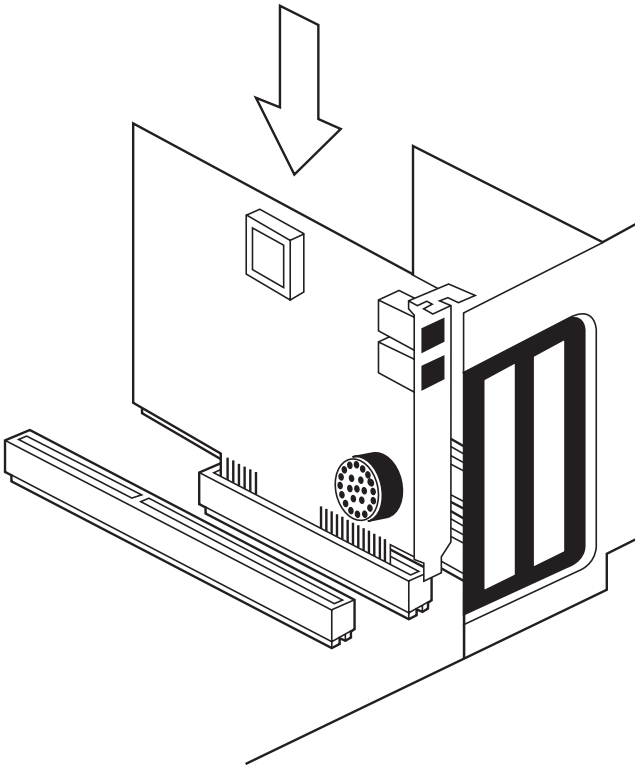




4. Unscrew and remove the solid bracket at the back of any available expansion slot.
5. Insert the modem board into the slot you have chosen, as in the picture below, with the gold leads on the modem board's edge firmly in the slot's groove.

**NOTE**

The picture below shows expansion slots lined up vertically on the floor of the computer. Some computers have horizontally stacked slots. These instructions apply for both configurations.



6. Once the modem is in place, screw the bracket at the back of the modem firmly to the computer's rear panel. This ensures that the modem board is firmly in place.
7. Replace the computer cover and all its screws. Reattach all cables and power cords.
8. If you currently have a phone plugged into the wall jack, disconnect it. Plug one end of the phone cable that came with the modem into the TELCO jack at the rear of the modem. Plug the other end of the cable into the wall jack.

### 3.3 Configuring with Windows 95

After removing all the connectors from the modem's jumpers and installing the modem, turn your computer on. Then follow these steps:

1. In the *New Hardware Found* dialog box, select the *Select from a list of alternate drivers* option. Then click on the *OK* button.
2. In the *Select Hardware Type* dialog box, find and click on the *Modem* selection. Then click on the *OK* button.
3. In the *Install New Modem* dialog box, find and click on the *U.S. Robotics* selection in the *Manufacturers* list.
4. Next, find and click on the 28.8 Courier modem listed in the *Models* list. The settings for this selection will work well for your modem. Then click on the *OK* button.

Windows 95 has now been configured to work with your new modem. Now you're ready to install your software.

### 3.4 Installing Your Software

1. Insert the QuickLink disk included with your modem or another modem software disk. If using other software, consult its own manual for installation procedures.
2. From Program Manager, choose File. Then choose **Run** and type **a:\install** and press **<Enter>**.
3. Once the software is installed, enter the QuickLink group and click on the QuickLink icon.

You have successfully finished installing your modem and software.

## 4. Communications Software

### NOTE

**If you are using the communications software included with your modem, you can disregard this chapter. However, if you are using your own communications software, please refer to the software's manual and this chapter.**

Communications software allows you to change settings and issue commands to your modem.

The software included with your modem is preconfigured for optimal performance with the Speedster 288. Refer to the software manual for any additional information. Be sure to install software after the modem is installed.

### 4.1 Configuring Your Modem

Some programs allow you to select your modem type from a menu. Select the Speedster 288 modem. If that modem is not listed, try a Courier Dual Standard, V.32 bis, V.FC, or V.34.

Other programs require you to enter an initialization string in the software Modem Setup screen. If this is the case, enter the following string to initialize your modem with the optimal settings: **AT&F1<Enter>**

These settings include: hardware flow control, a fixed serial port rate, and full result codes.

If you must use software flow control, enter the following string:  
**AT&F2<Enter>**

### 4.2 Configuring Your Software

1. Turn on your computer (and modem if you have an external).
2. Install your communications software (refer to the software's documentation).
3. Start your communications software program.
4. Set the software's serial-port (baud) rate based on your UART type. Also, fix or lock the serial-port rate (if the software is referred to as autobaud by the vendor, select OFF).

UART	Serial Rate
16550	115.2 or 57.6 Kbps
16450	38.4 Kbps
8250	19.2 Kbps

### NOTE

All Speedster 288s have a 16550 UART on the modem. Some software packages offer 28,800, 14,400, and 12,000 bps as serial-port rates. Do NOT select any of these options. Your modem will not function properly with these settings.

5. Specify the serial (COM) port and the IRQ used by the modem in the Windows Control Panel or in your communications software if working in DOS. The default configuration is COM 2, IRQ 3, unless you have changed it.
6. Specify your modem's flow-control settings: RTS/CTS for hardware flow control (highly recommended) or XON/XOFF for software flow control. You should disable the flow-control method you are not using.

### 4.3 Testing Your Installation

1. To test your modem and software installation, perform the software function that puts your computer in Terminal mode. In Terminal mode, a cursor appears on your screen, allowing you to send commands directly to the modem.
2. To determine if your computer and modem are communicating properly, type the following command: **AT E1 Q V1<Enter>**.

If the COM port and IRQ settings are correct on your modem and in your software, the modem responds, "OK."

If the characters you type do not appear, no **OK** appears, or double characters appear, see **Chapter 6**.

## 5. Commands

You do not need to know the commands in this chapter to use your Speedster 288. The commands shown here tell the Speedster 288 in your PC what to do in very technical terms.

Most people use the communications program's menus, dialog boxes, and icons to tell the communications program what they want the modem to do. The communications program then conveys the command, using the technical language shown in this chapter, to the modem.

Some people, however, prefer to communicate more directly with the modem. They type commands that go directly to the modem. What they type appears on a no-frills window on the screen, and they're said to be in "terminal mode." If you prefer to work this way, you'll find this chapter helpful.

### 5.1 Typing in Commands

- Use the BACKSPACE key to delete typing errors. (You cannot delete the original AT command since it is stored in the modem buffer.)
- Every command (except **A/** and **A>** and **+++**) must begin with the **AT** prefix and be entered by pressing the ENTER key. For example, to execute the **\$** command, you would type **AT\$** and then press the ENTER key.
- When you see an **n**, replace the **n** with one of the letter or numeric options listed for that command. For example, for the **En** command, you might type **ATEI**.
- If a command has numeric options and you don't include a number, zero is assumed. For example, if you type **ATB** to indicate a **Bn** command, the modem will understand that command to be **ATB0**. (The last character being zero, not "oh.")
- The maximum command length is 60 characters. (The modem doesn't count the **AT** prefix, returns [pressing the ENTER key], or spaces.)
- *Defaults are marked with an asterisk (\*).*
- Type commands in either upper or lower case, not a combination.

## 5.2 AT Commands

<b>\$</b>	Displays a basic command list; online help.
<b>A</b>	Manual Answer; goes off hook in answer mode. Pressing any key aborts the operations.
<b>A/</b>	Re-executes the last issued command. Used mainly to redial. This does not require the <b>AT</b> prefix and does not require that you press the ENTER key.
<b>A&gt;</b>	Re-executes the last command that was executed ten times. Command does not require the <b>AT</b> prefix and does not require that you press the ENTER key.
<b>Any key</b>	Aborts off-hook dial/answer operation and hangs up.
<b>AT</b>	Required command prefix except with <b>A/</b> , <b>+++</b> , and <b>A&gt;</b> . Use alone to test for <i>OK</i> result code.
<b>Bn</b>	U.S./ITU-TSS answer sequence.
<b>*</b>	<b>B0</b> (zero) ITU-TSS V.25 answer sequence.
	<b>B1</b> U.S. answer tone.
<b>Dn</b>	Dial the specified phone number. Includes the following:
<b>*</b>	<b>P</b> Pulse (rotary) dial.
	<b>T</b> Tone dial.
	<b>,</b> (Comma) Two-second pause; linked to S8 register.
	<b>;</b> (Semicolon) Return to <i>Command</i> mode after dialing.
	<b>!</b> (Exclamation point) Flashes the switch hook.
	<b>/</b> Delays for 125 msec before proceeding with dial string.
	<b>W</b> Wait for second dial tone (X3 or higher); linked to S6 register.
	<b>@</b> Dials, waits for quiet answer, and continues (X3 or higher).
	<b>R</b> Originates call using answer (reverse) frequencies.
	<b>#,*</b> Extended touchtone pad tones.
<b>DL</b>	Dials the last-dialed number.

\*Default

## SPEEDSTER 288 INTERNAL FAX/MODEM

<b>DSn</b>	Dials the phone number string stored in NVRAM at position <i>n</i> ( <i>n</i> = 0 through 3). Phone numbers are stored with the <b>&amp;Zn=s</b> command.
<b>D\$</b>	Displays a list of Dial commands.
<b>En</b>	Sets local echo.
*	<b>E0</b> (zero) Echo OFF. <b>E1</b> Modem displays keyboard commands.
<b>Fn</b>	Sets online local echo of transmitted data ON/OFF.
*	<b>F0</b> (zero) Local echo ON. Modem sends a copy of data it sends to the remote system to your screen. <b>F1</b> Local echo OFF. Receiving system may send a remote echo of data it receives.
<b>Hn</b>	Controls ON/OFF hook.
	<b>H0</b> (zero) Hangs up (goes on hook). <b>H1</b> Goes off hook.
<b>In</b>	Displays the following information:
	<b>I0</b> (zero) Four-digit product code. <b>I1</b> Results of ROM checksum. <b>I2</b> Results of RAM checksum. <b>I3</b> Product type. <b>I4</b> Current modem settings. <b>I5</b> Nonvolatile memory (NVRAM) settings. <b>I6</b> Link diagnostics. <b>I7</b> Product configuration. <b>I9</b> Plug and Play status. <b>I11</b> Call statistics.
<b>Ln</b>	Controls speaker volume (internals only).
*	<b>L0</b> (zero) Low. <b>L1</b> Low. <b>L2</b> Medium. <b>L3</b> High.
<b>Mn</b>	Operates speaker.
*	<b>M0</b> (zero) Speaker always OFF. <b>M1</b> Speaker ON until CONNECT. <b>M2</b> Speaker always ON. <b>M3</b> Speaker ON after dial, until CONNECT.

\*Default



<b>On</b>	Returns online. <b>O0</b> (zero) Returns online. <b>O1</b> Returns online and retrains.
<b>P</b>	Sets pulse dial (for phone lines that don't support touchtone dialing).
<b>Qn</b> *	Displays/suppresses result codes. <b>Q0</b> (zero) Displays result codes. <b>Q1</b> Quiet mode; no result codes. <b>Q2</b> Displays result codes only in <i>Originate</i> mode.
<b>Sr.b=n</b>	Sets bit .b of register r to n (0/OFF or 1/ON).
<b>Sr=n</b>	Sets register r to n.
<b>Sn?</b>	Displays contents of S-Register n.
<b>S\$</b>	Displays a list of the S-Registers.
<b>T</b>	Sets tone dial.
<b>Vn</b> *	Displays verbal/numeric result codes. <b>V0</b> (zero) Numeric codes. <b>V1</b> Verbal codes.
<b>Xn</b>	Sets result code displayed. Default is X4. (See the table on the next page for more information.)

\*Default

## SPEEDSTER 288 INTERNAL FAX/MODEM

### X<sub>n</sub> Setting

Result Codes	X0	X1	X2	X3	X4
0/OK	•	•	•	•	•
1/CONNECT	•	•	•	•	•
2/RING	•	•	•	•	•
3/NO CARRIER	•	•	•	•	•
4/ERROR	•	•	•	•	•
5/CONNECT 1200		•	•	•	•
6/NO DIAL TONE			•		•
7/BUSY				•	•
8/NO ANSWER♦♦				•	•
10/CONNECT 2400		•	•	•	•
13/CONNECT 9600		•	•	•	•
18/CONNECT 4800		•	•	•	•
20/CONNECT 7200		•	•	•	•
21/CONNECT 12000		•	•	•	•
25/CONNECT 14400		•	•	•	•
43/CONNECT 16800		•	•	•	•
85/CONNECT 19200		•	•	•	•
91/CONNECT 21600		•	•	•	•
99/CONNECT 24000		•	•	•	•
103/CONNECT 26400		•	•	•	•
107/CONNECT 28800		•	•	•	•
151/CONNECT 31200		•	•	•	•
155/CONNECT 33600		•	•	•	•

### Functions

Adaptive Dialing			•	•	•
Wait for 2nd Dial Tone (W)			•		•
Wait for Answer (@)				•	•
Fast Dial			•		•

♦♦ Requires @ in dial string; replaces NO CARRIER

<b>Yn</b>	Selects power-on/reset default configuration.
*	<b>Y0</b> (zero) Default is profile 0 setting in NVRAM.
	<b>Y1</b> Default is profile 1 setting in NVRAM.
	<b>Y2</b> Generic Template (&F0).
	<b>Y3</b> Hardware Flow Control (&F1).
	<b>Y4</b> Software Flow Control (&F2).
<b>Zn</b>	Resets modem.
	<b>Z0</b> (zero) Resets modem to NVRAM profile selected by Y command.
	<b>Z1</b> Resets modem to NVRAM profile 0.
	<b>Z2</b> Resets modem to NVRAM profile 1.
	<b>Z3</b> Resets modem to factory-default profile 0 (&F0).
	<b>Z4</b> Resets modem to factory-default profile 1 (&F1).
	<b>Z5</b> Resets modem to factory-default profile 2 (&F2).
<b>&amp;\$</b>	Displays a list of ampersand (&) commands.
<b>&amp;An</b>	Enables/disables ARQ codes.
	<b>&amp;A0</b> (zero) ARQ result codes disabled.
	<b>&amp;A1</b> ARQ result codes enabled.
	<b>&amp;A2</b> V.32 modulation indicator added.
*	<b>&amp;A3</b> Protocol indicators added—LAPM/MNP/NONE (error control) and V.42 bis/MNP (data compression).
<b>&amp;Bn</b>	Sets modem's serial-port rate.
	<b>&amp;B0</b> Variable, follows connection rate.
*	<b>&amp;B1</b> Fixed serial-port rate.
	<b>&amp;B2</b> Fixed in ARQ mode, variable in non-ARQ mode.
<b>&amp;Cn</b>	Controls Carrier Detect (CD) signal.
	<b>&amp;C0</b> (zero) CD override.
*	<b>&amp;C1</b> Normal CD operations.

\*Default

## SPEEDSTER 288 INTERNAL FAX/MODEM

<b>&amp;Dn</b>	Controls Data Terminal Ready (DTR) operations.
<b>&amp;D0</b> (zero)	DTR override.
<b>&amp;D1</b>	Reserved.
*	<b>&amp;D2</b> Normal DTR operations.
<b>&amp;Fn</b>	Loads a read-only (non-programmable) factory configuration.
<b>&amp;F0</b> (zero)	Generic template.
<b>&amp;F1</b>	Hardware flow-control template.
<b>&amp;F2</b>	Software flow-control template.
<b>&amp;Gn</b>	Sets Guard Tone.
*	<b>&amp;G0</b> (zero) No guard tone, U.S. and Canada.
	<b>&amp;G1</b> 550-Hz guard tone, some European countries, requires B0 setting.
	<b>&amp;G2</b> 1800-Hz guard tone, U.K., requires B0 setting.
<b>&amp;Hn</b>	Sets Transmit Data (TD) flow control.
<b>&amp;H0</b> (zero)	Flow control disabled.
*	<b>&amp;H1</b> Hardware flow control, Clear to Send (CTS).
	<b>&amp;H2</b> Software flow control, XON/XOFF.
	<b>&amp;H3</b> Hardware and software flow control.
<b>&amp;In</b>	Sets Receive Data (RD) software flow control (see also &Rn).
*	<b>&amp;I0</b> (zero) Software flow control disabled.
	<b>&amp;I1</b> XON/XOFF signals to your modem and remote system.
	<b>&amp;I2</b> XON/XOFF signals to your modem only.
<b>&amp;Kn</b>	Enables/disables data compression.
<b>&amp;K0</b> (zero)	Data compression disabled.
*	<b>&amp;K1</b> Auto enable/disable.
	<b>&amp;K2</b> Data compression enabled.
	<b>&amp;K3</b> MNP 5 compression disabled.
<b>&amp;Mn</b>	Sets Error Control (ARQ) 1200 bps and higher.
<b>&amp;M0</b> (zero)	Normal mode, error control disabled.
	<b>&amp;M1</b> Reserved.
	<b>&amp;M2</b> Reserved.
	<b>&amp;M3</b> Reserved.
*	<b>&amp;M4</b> Normal/ARQ.
	<b>&amp;M5</b> ARQ mode.

\*Default

<b>&amp;Nn</b>	Sets connect speed. If connection cannot be established at this speed, the modem will hang up.
*	<b>&amp;N0</b> (zero) Variable rate.
	<b>&amp;N1</b> 300 bps.
	<b>&amp;N2</b> 1200 bps.
	<b>&amp;N3</b> 2400 bps.
	<b>&amp;N4</b> 4800 bps.
	<b>&amp;N5</b> 7200 bps.
	<b>&amp;N6</b> 9600 bps.
	<b>&amp;N7</b> 12,000 bps.
	<b>&amp;N8</b> 14,400 bps.
	<b>&amp;N9</b> 16,800 bps.
	<b>&amp;N10</b> 19,200 bps.
	<b>&amp;N11</b> 21,600 bps.
	<b>&amp;N12</b> 24,000 bps.
	<b>&amp;N13</b> 26,400 bps.
	<b>&amp;N14</b> 28,800 bps.
	<b>&amp;N15</b> 31,200 bps.
	<b>&amp;N16</b> 33,600 bps.
<b>&amp;Pn</b>	Sets pulse (rotary) dial make/break ratio.
*	<b>&amp;P0</b> (zero) U.S./Canada ratio, 39%/61%.
	<b>&amp;P1</b> U.K. ratio, 33%/67%.
<b>&amp;Rn</b>	Sets Receive Data (RD) hardware flow control, Request to Send (RTS) (see also <b>&amp;In</b> ).
	<b>&amp;R0</b> (zero) Reserved.
	<b>&amp;R1</b> Modem ignores RTS.
*	<b>&amp;R2</b> Received Data to computer only on RTS.
<b>&amp;Sn</b>	Controls Data Set Ready (DSR) operations.
*	<b>&amp;S0</b> (zero) DSR override; always ON.
	<b>&amp;S1</b> Modem controls DSR.
<b>&amp;Tn</b>	Begins test modes.
	<b>&amp;T0</b> (zero) Ends testing.
	<b>&amp;T1</b> Initiates Analog Loopback.
	<b>&amp;T2</b> Reserved.
	<b>&amp;T3</b> Initiates Local Digital Loopback.
	<b>&amp;T4</b> Enables Remote Digital Loopback.
*	<b>&amp;T5</b> Prohibits Remote Digital Loopback.
	<b>&amp;T6</b> Initiates Remote Digital Loopback.
	<b>&amp;T7</b> Initiates Remote Digital with self-test and error detector.

\*Default

## SPEEDSTER 288 INTERNAL FAX/MODEM

<b>&amp;Tn</b>	Begins test modes.
<b>&amp;T8</b>	Initiates Analog Loopback with self-test and error detector.
<b>&amp;Un</b>	Sets floor connect speed when <b>&amp;Un</b> is set greater than 0. <b>&amp;Nn</b> is the ceiling connect speed. See <b>&amp;Nn</b> .
*	<b>&amp;U0</b> (zero) Disabled.
	<b>&amp;U1</b> 300 bps.
	<b>&amp;U2</b> 1200 bps.
	<b>&amp;U3</b> 2400 bps.
	<b>&amp;U4</b> 4800 bps.
	<b>&amp;U5</b> 7200 bps.
	<b>&amp;U6</b> 9600 bps.
	<b>&amp;U7</b> 12,000 bps.
	<b>&amp;U8</b> 14,400 bps.
	<b>&amp;U9</b> 16,800 bps.
	<b>&amp;U10</b> 19,200 bps.
	<b>&amp;U11</b> 21,600 bps.
	<b>&amp;U12</b> 24,000 bps.
	<b>&amp;U13</b> 26,400 bps.
	<b>&amp;U14</b> 28,800 bps.
<b>&amp;Wn</b>	Writes current configuration to NVRAM templates.
<b>&amp;W0</b> (zero)	Modifies the NVRAM 0 template (Y0).
<b>&amp;W1</b>	Modifies the NVRAM 1 template (Y1).
<b>&amp;Yn</b>	Sets break handling.
*	<b>&amp;Y0</b> (zero) Destructive, but doesn't send break.
	<b>&amp;Y1</b> Destructive, expedited.
	<b>&amp;Y2</b> Nondestructive, expedited.
	<b>&amp;Y3</b> Reserved.
<b>&amp;Zn=s</b>	Writes phone number string <i>s</i> to NVRAM at position <i>n</i> ( <i>n</i> = 0 through 3).
<b>&amp;Zn=L</b>	Writes last executed dial string to NVRAM at position <i>n</i> ( <i>n</i> = 0 through 3).
<b>&amp;Zn?</b>	Displays the phone number stored at position <i>n</i> ( <i>n</i> = 0 through 3).
<b>&lt;Ctrl&gt;C</b>	Cancels the display of the help screens.

\*Default

- <Ctrl>K      Cancels the display of the help screens.
- <Ctrl>S      Stops/restarts help screens.
- +++            Escapes to online-command mode. This does not require the **AT** prefix and does not require that you press the ENTER key.

### 5.3 S-Registers

To type in an S-Register, first type the **AT** prefix, then the S-Register number (0 to 255, unless otherwise indicated), then =, and then the numeric value. For example, to set S-Register S3 to a value of 25, type **ATS3=25**.

Register	Default	Function
S0 (zero)	1	Sets the number of rings on which to answer in Auto Answer Mode. When set to 0, Auto Answer is disabled.
S1	0 (zero)	Counts and stores the number of rings from an incoming call (read only).
S2	43	Stores the ASCII decimal code for the escape-code character. Default character is "+."
S3	13	Stores the ASCII code for the Carriage Return character <CR>.
S4	10	Stores the ASCII decimal code for the Line Feed character <LF>.
S5	8	Stores the ASCII decimal code for the Backspace character <BS>.
S6	2	Sets the number of seconds the modem waits for dial tone before dialing.
S7	60	Sets the number of seconds the modem waits for a carrier or answers before returning on-hook and sending a <i>No Carrier</i> result code.
S8	2	Sets the duration, in seconds, for the pause (,) option in the Dial command.

Register	Default	Function
S9	6	Sets the required duration, in tenths of a second, of the remote modem's carrier signal before recognition by your modem.
S10	7	<p>Sets the duration, in tenths of a second, that the modem waits after loss of carrier before hanging up. This guard time allows the modem to distinguish between a line hit, or other disturbances that momentarily break the connection, from a true disconnect (hang up) by the remote modem.</p> <p>While we don't recommend connecting the modem to a line with call waiting, if you have it, you may wish to adjust this setting upward to prevent the modem from misinterpreting the second call signal as a disconnect by the remote modem. A better alternative is to ask your phone company how to temporarily disable call waiting (usually *70W). For example: <b>ATDT *70W phone number.</b></p> <p>Note: If you set S10 = 255, the modem will not hang up when carrier is lost. Dropping DTR hangs up the modem.</p>
S11	70	Sets the duration and spacing, in milliseconds, for tone dialing.
S12	50	Sets the duration, in fiftieths of a second, of the guard time for the escape-code sequence.



<b>Register</b>	<b>Default</b>	<b>Function</b>
S13	0 (zero)	Bit-mapped register. Select the bit(s) you want on and set S13 to the total of the values in the Value column. For example, <b>ATS13=17</b> enables bit 0 (value is 1) and bit 4 (value is 16).

<b>Bit</b>	<b>Value</b>	<b>Result</b>
0 (zero)	1	Reset when DTR drops.
1	2	Reset non MNP transmit buffer from 1.5K to 128 bytes. ♦♦
2	4	Set backspace key to delete.
3	8	On DTR signal, auto dial the number stored in NVRAM at position 0.
4	16	At power on/reset, Auto Dial the number stored in NVRAM at position 0.
5	32	Reserved.
6	64	Reserved.
7	128	Disconnect on escape code.

♦♦ The 1.5K-byte non-ARQ buffer allows data transfer with Xmodem- and Ymodem-type file transfer protocols without using flow control.

The 128-byte option lets remote users with slower modems keep data you're sending from scrolling off their screens. When remote users send your computer an XOFF (Ctrl-S) and you stop transmitting, the data in transit from your modem's buffer doesn't exceed the size of their screen.

This is also very helpful in situations when a remote modem/printer application is losing characters.

## SPEEDSTER 288 INTERNAL FAX/MODEM

<b>Register</b>	<b>Default</b>	<b>Function</b>																											
S14	0 (zero)	Reserved.																											
S15	0 (zero)	Bit-mapped register setup. To set the register, see instructions for S13.																											
		<table><thead><tr><th><b>Bit</b></th><th><b>Value</b></th><th><b>Result</b></th></tr></thead><tbody><tr><td>0 (zero)</td><td>1</td><td>Disable ARQ/MNP for V.22.</td></tr><tr><td>1</td><td>2</td><td>Disable ARQ/MNP for V.22 bis.</td></tr><tr><td>2</td><td>4</td><td>Disable ARQ/MNP for V.32/V.32 bis/V.32terbo.</td></tr><tr><td>3</td><td>8</td><td>Disable MNP handshake.</td></tr><tr><td>4</td><td>16</td><td>Disable MNP level 4.</td></tr><tr><td>5</td><td>32</td><td>Disable MNP level 3.</td></tr><tr><td>6</td><td>64</td><td>MNP incompatibility.</td></tr><tr><td>7</td><td>128</td><td>Disable V.42 operation.</td></tr></tbody></table>	<b>Bit</b>	<b>Value</b>	<b>Result</b>	0 (zero)	1	Disable ARQ/MNP for V.22.	1	2	Disable ARQ/MNP for V.22 bis.	2	4	Disable ARQ/MNP for V.32/V.32 bis/V.32terbo.	3	8	Disable MNP handshake.	4	16	Disable MNP level 4.	5	32	Disable MNP level 3.	6	64	MNP incompatibility.	7	128	Disable V.42 operation.
<b>Bit</b>	<b>Value</b>	<b>Result</b>																											
0 (zero)	1	Disable ARQ/MNP for V.22.																											
1	2	Disable ARQ/MNP for V.22 bis.																											
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7	128	Disable V.42 operation.																											
S16	0 (zero)	Bit-mapped register setup. To set the register, see instructions for S13.																											
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<b>Bit</b>	<b>Value</b>	<b>Result</b>																											
0 (zero)	1	Reserved.																											
1	2	Touchtone dialing test.																											
2-7	4-128	Reserved.																											
S17	0 (zero)	Reserved.																											
S18	0 (zero)	Test timer for &T loopback testing. Sets the time, in seconds, of testing before the modem automatically times out and terminates the test. When set to 0, the timer is disabled. Valid range is 1 to 255.																											

<b>Register</b>	<b>Default</b>	<b>Function</b>
S19	0 (zero)	Sets the duration, in minutes, for the inactivity timer. The timer activates when there is no data activity on the phone line; at time-out the modem hangs up. S19 = 0 disables the timer.
S20	0 (zero)	Reserved.
S21	10	Sets the length, in 10-millisecond units, of breaks sent from the modem to the computer; applies to MNP or V.42 mode only.
S22	17	Stores the ASCII decimal code for the XON character.
S23	19	Stores the ASCII decimal code for the XOFF character.
S24	0 (zero)	Reserved.
S25	20	Sets the duration, in hundredths of a second, that DTR must be dropped so that the modem doesn't interpret a random glitch as a DTR loss. (Most users will want to use the default; this register is useful for setting compatibility with older systems running under older operating software.)
S26	0 (zero)	Reserved.
S27	0 (zero)	Bit-mapped register setup. To set the register, see instructions for S13.

<b>Bit</b>	<b>Value</b>	<b>Result</b>
0 (zero)	1	Enables ITU-TSS V.21 modulation at 300 bps for overseas calls; in V.21 mode, the modem answers both overseas and domestic (U.S. and Canada) calls.

## SPEEDSTER 288 INTERNAL FAX/MODEM

### Register

S27

### Default

0 (zero)

### Function

Bit-mapped register setup. To set the register, see instructions for S13.

Bit	Value	Result
0 (zero)	1	only originates V.21 calls. (Default Bell 103.)
1	2	Enables unencoded (non-trellis coded) modulation in V.32 mode; rarely used part of ITU-TSS Recommendation V.32.
2	4	Disables V.32 modulation.
3	8	Disables 2100-Hz answer tone to allow two V.42 modems to connect more quickly.
4	16	Enables V.23 fallback mode.
5	32	Disables V.32 bis mode.
6	64	Reserved.
7	128	Software compatibility mode. This setting disables the codes and displays the 9600 code instead. The actual rate of the call can be viewed on the AT16 screen. Used for unusual software incompatibilities. Some software may not accept 7200, 12,000, and 14,400 bps or greater result codes.

<b>Register</b>	<b>Default</b>	<b>Function</b>
S28	0 (zero)	Eliminates the V.32 answer tones for a faster connection.
	8	Default item (all times are in tenths of seconds).
	255	Disables all connections except V.32 at 9600 bps.
S29	20	Sets the duration, in tenths of a second, of the V.21 answer mode fallback timer.
S30	0 (zero)	Reserved.
S31	128	Reserved.
S32	2	Bit-mapped register setup. To set the register, see the instructions for S13.

<b>Bit</b>	<b>Value</b>	<b>Result</b>
0 (zero)	1	V.8 Call Indicate enabled.
1	2	Enables V.8 mode.
2	4	Disable V.FC modulation.
3	8	Disable V.34 modulation.
4	16	Disable 33.6-Kbps support.
5	32	Reserved.
6	64	Reserved.
7	128	Reserved.

## SPEEDSTER 288 INTERNAL FAX/MODEM

<b>Register</b>	<b>Default</b>	<b>Function</b>																											
S33	0 (zero)	Bit-mapped register setup. To set the register, see the instructions for S13. <table><thead><tr><th><b>Bit</b></th><th><b>Value</b></th><th><b>Result</b></th></tr></thead><tbody><tr><td>0 (zero)</td><td>1</td><td>Disable 2400 symbol rate.</td></tr><tr><td>1</td><td>2</td><td>Disable 2743 symbol rate.</td></tr><tr><td>2</td><td>4</td><td>Disable 2800 symbol rate.</td></tr><tr><td>3</td><td>8</td><td>Disable 3000 symbol rate.</td></tr><tr><td>4</td><td>16</td><td>Disable 3200 symbol rate.</td></tr><tr><td>5</td><td>32</td><td>Disable 3429 rate.</td></tr><tr><td>6</td><td>64</td><td>Reserved.</td></tr><tr><td>7</td><td>128</td><td>Disable shaping.</td></tr></tbody></table>	<b>Bit</b>	<b>Value</b>	<b>Result</b>	0 (zero)	1	Disable 2400 symbol rate.	1	2	Disable 2743 symbol rate.	2	4	Disable 2800 symbol rate.	3	8	Disable 3000 symbol rate.	4	16	Disable 3200 symbol rate.	5	32	Disable 3429 rate.	6	64	Reserved.	7	128	Disable shaping.
<b>Bit</b>	<b>Value</b>	<b>Result</b>																											
0 (zero)	1	Disable 2400 symbol rate.																											
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2	4	Disable 2800 symbol rate.																											
3	8	Disable 3000 symbol rate.																											
4	16	Disable 3200 symbol rate.																											
5	32	Disable 3429 rate.																											
6	64	Reserved.																											
7	128	Disable shaping.																											
S34	0 (zero)	Bit-mapped register setup. To set registers, see instructions for S13. <table><thead><tr><th><b>Bit</b></th><th><b>Value</b></th><th><b>Result</b></th></tr></thead><tbody><tr><td>0 (zero)</td><td>1</td><td>Disable 8S-2D trellis encoding.</td></tr><tr><td>1</td><td>2</td><td>Disable 16S-4D trellis encoding.</td></tr><tr><td>2</td><td>4</td><td>Disable 32S-2D trellis encoding.</td></tr><tr><td>3</td><td>8</td><td>Disable 64S-4D trellis encoding.</td></tr><tr><td>4</td><td>16</td><td>Disable non-linear coding.</td></tr><tr><td>5</td><td>32</td><td>Disable TX level deviation.</td></tr><tr><td>6</td><td>64</td><td>Disable Pre-emphasis.</td></tr><tr><td>7</td><td>128</td><td>Disable Pre-coding.</td></tr></tbody></table>	<b>Bit</b>	<b>Value</b>	<b>Result</b>	0 (zero)	1	Disable 8S-2D trellis encoding.	1	2	Disable 16S-4D trellis encoding.	2	4	Disable 32S-2D trellis encoding.	3	8	Disable 64S-4D trellis encoding.	4	16	Disable non-linear coding.	5	32	Disable TX level deviation.	6	64	Disable Pre-emphasis.	7	128	Disable Pre-coding.
<b>Bit</b>	<b>Value</b>	<b>Result</b>																											
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4	16	Disable non-linear coding.																											
5	32	Disable TX level deviation.																											
6	64	Disable Pre-emphasis.																											
7	128	Disable Pre-coding.																											
S35 through S37		Reserved.																											

<b>Register</b>	<b>Default</b>	<b>Function</b>
S38	0 (zero)	Sets an optional delay, in seconds, before a forced hang-up and clearing of the Transmit buffer when DTR drops during an ARQ call. This allows time for a remote modem to acknowledge receipt of all transmitted data before it is disconnected. The modem immediately hangs up when DTR drops. This option only applies to connections terminated by dropping DTR. If the modem receives the ATH command, it ignores S38 and immediately hangs up.

## 6. Troubleshooting

### 6.1 Before the Modems Connect

*If your Speedster 288 does not respond to AT commands...*

- Make sure you are in terminal mode. (Your communications software should let you switch to terminal mode.)
- Make sure you selected the correct COM port and IRQ in your communications software, or in your Windows Control Panel.
- Type in all upper (**AT**) or lower (**at**) case.
- There may be a COM port/IRQ conflict. (Refer to **Chapter 3**.) You will need to remove your modem from the PC and change your COM port and IRQ settings to COM port 3 and IRQ 5. If you change your COM port and IRQ settings, also make the changes in your software and in Windows.

*If your Speedster 288 does not answer the phone or does not “go off hook” to dial a number...*

- Make sure the phone cord is connected from the jack on the modem labeled TELCO to an analog (standard) phone wall jack.
- Review your software manual to see what DTR operations are required.
- (*For answering*) Make sure your software has “auto answer” enabled.

*If double characters are displayed on your screen (For example, AATT)...*

Both your Speedster 288 and your communications software’s local echo features are on. Turn one off by going into terminal mode (your communications software should let you switch to terminal mode) and:

1. Typing **ATE0** (the last character is zero)
2. And then pressing the ENTER key.



*If both modems exchange carrier signals but fail to establish a data communications link...*

- Place the call again. You may have had a bad phone line or a bad connection. The telephone company routes all calls, even local calls, differently each time you call.
- Call a different modem to see if the problem persists. The problem may be with the modem you first tried to call.
- The remote modem might be an older 2400-bps modem that does not support error control. Disable error control by going into terminal mode (your communications software should let you switch to terminal mode) and:
  1. Type **AT&M0** (the last character is zero)
  2. And then press the ENTER key.
  3. Try connecting with the remote modem again.
  4. When the call is finished, remember to reset the modem by typing **ATZ** and then pressing the ENTER key.

## **6.2 During Data Transfer**

*If your screen displays random or garbage characters...*

- Set your software to the same word length, parity, and stop bits as the remote modem.
- Make sure that your software and modem are set to the same flow-control setting and to either a fixed or variable serial-port rate.
- Load the template that enables hardware flow control as well as other optimal settings. Go into terminal mode (your communications software should let you switch to terminal mode) and:
  1. Type **AT&F1**
  2. And then press the ENTER key.
- Disable any Terminate and Stay Resident (TSR) programs running in the background.

*If your communications software is reporting many Cyclic Redundancy Check (CRC) errors and low Characters Per Second (CPS)...*

- Place the call again. You may have had a bad phone line or a bad connection. The telephone company routes all calls, even local calls, differently each time you call.
- Load the template that enables hardware flow control as well as other optimal settings. Go into terminal mode (your communications software should let you switch to terminal mode) and:
  1. Type **AT&F1**
  2. And then press the ENTER key.
- Try the Zmodem file transfer protocol. If that doesn't work, try Ymodem. (Only use Xmodem as a last resort.)
- Lower the serial-port rate in your communications software to 38,400 bps or 19,200 bps.
- Disable any Terminate and Stay Resident (TSR) programs running in the background, such as screen savers.

*If errors are occurring while you are faxing...*

- Enter this initialization string in your software modem setup screen:  
**AT&H3&I2&R2S7=90**
- Disable any Terminate and Stay Resident (TSR) programs that are running in the background, such as screen savers.
- If your problems occur when you send faxes from Windows, make sure you load the communications driver that came with your fax software. (This may require re-installing the software.)

*If you have run DOS 6.0's Double Spaced program, do the following before running any fax software:*

Windows Users:

- Open the Windows **SYSTEM.INI** file.
- Add this line under the [386 Enh] header:  
**EMMEXCLUDE=C800-D1FF**

DOS Users:

- Open the DOS **CONFIG.SYS** file.
- Add the second line below the first:  
**device=c:\dos\himem.sys**  
**device=c:\dos\emm386.exe noems x=c800-d1ff**
- Reboot your computer.

*If you are running DOS 6.0, run the following DOS program before you run your fax software...*

- Type **VER** at the DOS prompt to determine your version of DOS.
- Run the program **MEMMAKER.EXE** from the DOS directory prompt. This program loads all of your Terminate and Stay Resident (TSR) programs in the most efficient order.

### **6.3 Calling Black Box**

If you determine that your Speedster 288 Internal Fax/Modem is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box.

Before you do, make a record of the history of the problem. Black Box will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

### **6.4 Shipping and Packaging**

If you need to transport or ship your Speedster 288:

- Package it carefully. We recommend that you use the original container.
- If you are shipping the Speedster 288 for repair, make sure you include everything that came in the original package. Before you ship, contact Black Box to get a Return Materials Authorization (RMA) number.



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