

Installation and Operation

USER'S GUIDE

WS-5614HSM(G) / WS-5614HMM(G)

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Section One - Introduction

Your new 56Kbps modem is a high speed PC communication peripheral that combines Data, Fax, Voice, Speakerphone functions into a single device. This high performance modem connects your computer to all popular modems and fax machines available today.

This manual provides installation and operating instructions for your modem. Also included in this manual are listings and descriptions of the standard AT command set, S-registers, and troubleshooting tips. Be certain to read *Section Two - Installing the Modem* thoroughly before performing the actual installation. Our customer support experience has shown that many costly and time-consuming calls can be avoided with closer attention to the installation information provided here.

(V) - 5614 HSM(G)

1.1 Modem Compatibility

Your modem is compatible with the following standards:

- V.90 (56Kbps download stream only)
 - K56 flex (56kbps download stream only)
 - V.34+ (33600 bps)
 - V.32bis (14400 bps)
 - V.23 (1200/75 bps)
 - V.22 (1200 bps)
 - Bell 212A (1200 bps)
 - V.17 (14400 bps FAX)
 - V.27ter (4800 bps FAX)
 - V.42bis (data compression)
 - MNP 5 (data compression)
 - TIA/EIA 602 AT Command set
 - V.80 (Video Ready mode)
 - TIA/EIA578 Class Fax command Set
 - TIA/EIA 695 Voice command
 - V.34(28800 bps)
 - V.32 (9600 bps)
 - V.22bis (2400 bps)
 - V.21 (300 bps)
 - Bell 103 (300 bps)
 - V.29 (9600 bps FAX)
 - V.21 Channel-2 (300 bps FAX)
 - V.42 (error correction)
 - MNP 2-4 (error correction)
 - V.8 Start-up sequence
 - V.8 bis Start-up sequence
 - Plug and Play PCI Spec. V1.0a
- ** WS-5614 HMM(G) is a Rockwell based Data Fax Modem
*** WS-5614 HSM(G) is a Rockwell based modem with Voice Functions

Section Two - Installing The Modem

This section explains how to connect your modem to your computer.

2.1 Unpacking Your Modem

In addition to this manual, your modem package contains the following items:

- One modem
- Modem software A.P. disc
- One software manual
- One telephone cable
- Voice socket Bracket (WS-5614HSM(G))

NOTE: Contact your dealer if any of the above items are missing from your package

2.2 Modem Installation

The following steps provide instructions for installing your modem.

2.2.1 Hardware Installation

CAUTION: Before removing the cover from your computer, turn off and unplug the computer and all attached peripherals. Discharge any static electricity from your body by touching any metal surface before removing the modem from its antistatic bag.

1. Turn off and unplug your computer from the AC outlet.
2. Remove the computer's cover according to its owner's manual.
3. Select any available PCI bus slot.
4. Remove the bracket and save the screw.
5. Carefully insert the modem into the selected slot. Apply even pressure until the modem is firmly seated.
6. Secure the bracket with the screw saved earlier. Store the bracket for future use.

7. Replace the computer cover and plug in your computer. Reconnect all cables.
8. Connect the telephone cable into the modem's "LINE" connector (see Figure 2-2). Attach the other end into the telephone wall jack.
9. Connect the sound jacks between MODEM and your Sound Card or the bracket provided with the package. Please carefully read your Sound Card User's Manual for connector pin assignment of Sound Card.

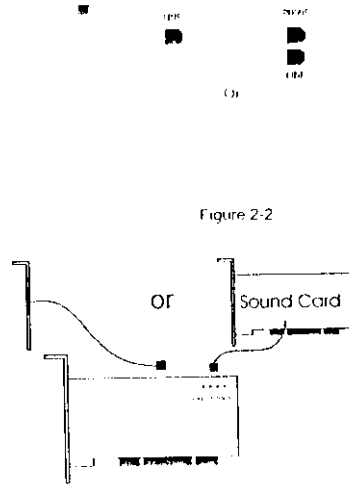


Figure 2-2

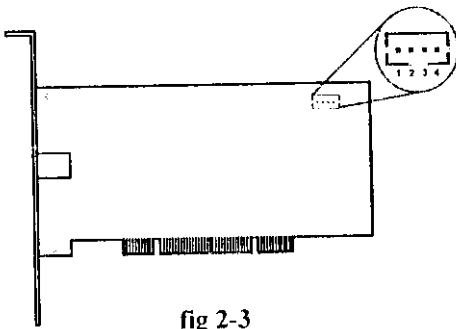
This completes the internal modem installation.

NOTE: * The back of your modem should look like Figure 2-2.

2.2.2 Jack Connections

Sound Jacks

If you purchased WS-5614HSM(G) Voice MODEM, you can use all voice functions through telephone handset (Telephone set connection is not allowed in some countries. Therefore, phone jack connection is not available for some country versions.), sound jacks on MODEM card or sound jacks on sound card. Please refer to fig.2-3 for pin assignment.



1. Lineout
2. Ground
3. Ground
4. Linein

fig 2-3

2.2.3 Setting Up Modem Under Windows 98 / OSER2

This internal modem supports the Plug and Play feature. It allows your computer to set the optimal configuration for the modem and communication software automatically.

NOTE: Check your version of Windows 98 / OSER2 by looking in "Start" => "Settings" => "Control Panel" => "System" => "General".

PART A of the installation is for **W98** (Windows 98 version 4.10.1998) only.

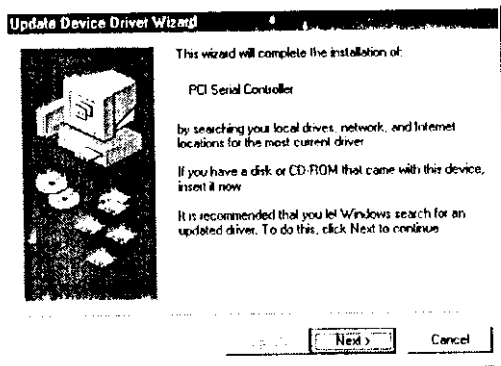
PART B of the installation is for **OSR2** (Windows 95 Version 4.00.950B) only.

***PART A (Windows 98 version 4.10.1998)**

***Go to Part B if you have OSR2**

A Windows®95 modem driver diskette labeled with "**WS-5614HMM(G) Modem Driver**" or "**WS-5614HSM(G) Modem Driver**" was provided with the modem. Please follow the procedure below to install the modem driver:

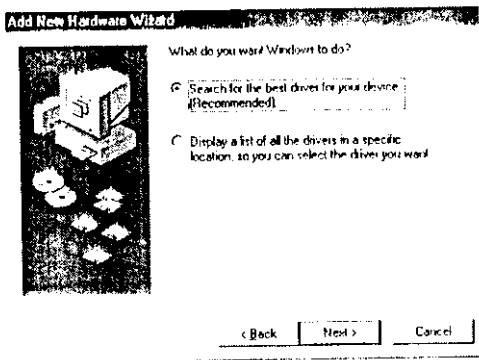
1. Turn ON computer power after completing hardware installation.
2. Windows®98 will automatically detect the Plug and Play modem and display a message under New Hardware Found as shown below.



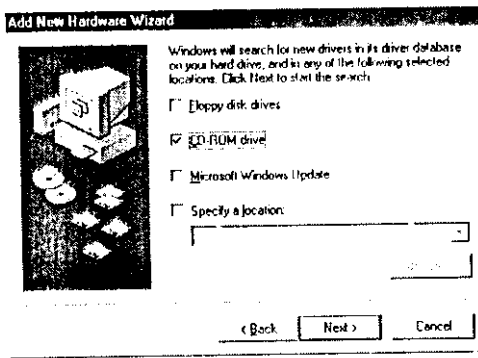
3. Next, insert disk labeled "Modem Driver CD-ROM" in CD-ROM Drive, then click "Next".

Click "Next"

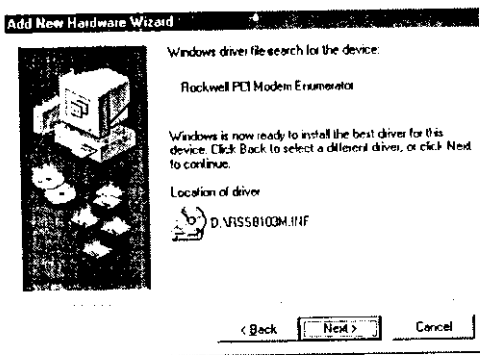
Click "Next"



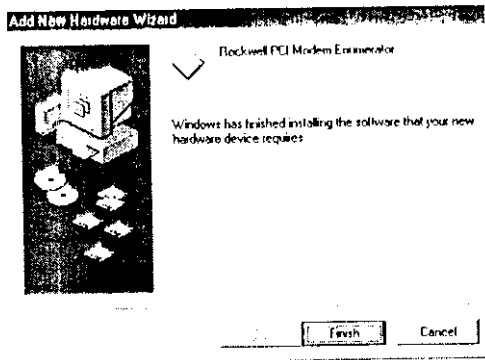
Select "CD-ROM" Drive, then press "Next"



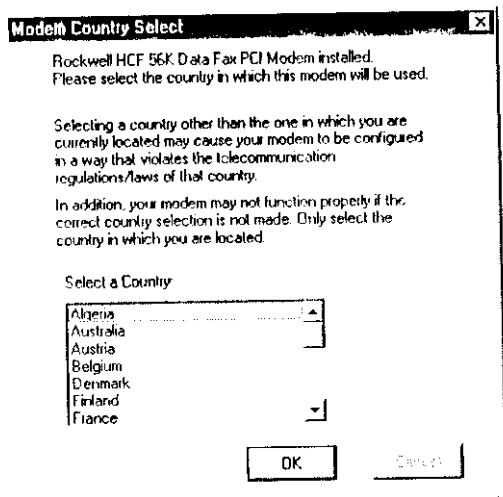
Click "Next"



Click "Finish"



Select the country you need, then Press "OK"



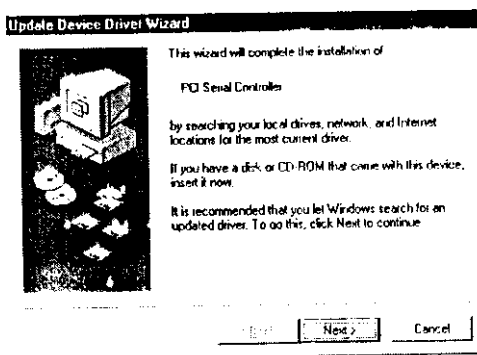
4. Proceed to Section 2.2.4.

PART B (OSR2 Windows 95 version 4.00.950B)

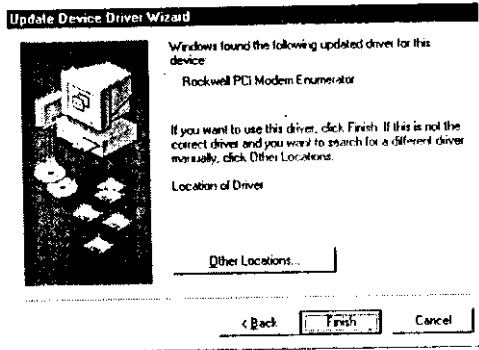
A Windows[®]95 modem driver diskette labeled with "WS-5614HMM(G) Modem Driver" or "WS-5614HSM(G) Modem Driver" was provided with the modem. Please follow the procedure below to install the modem driver:

1. Turn ON computer power after completing hardware installation.
2. OSR2 will automatically detect the Plug and Play modem and display a message under Update Device Driver Wizard menu as shown below:

Click "Next"

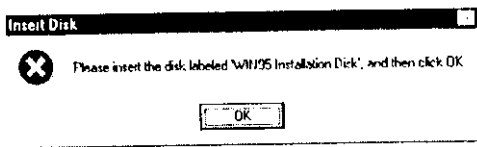


Click "Finish"



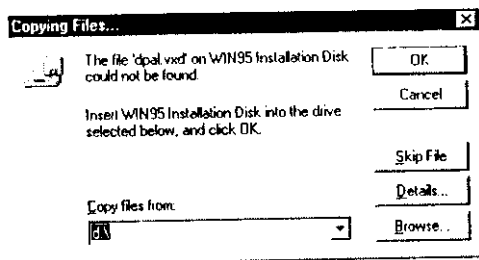
3. Next, insert CD-ROM in CD-ROM Drive , then click "OK"

Click "OK"



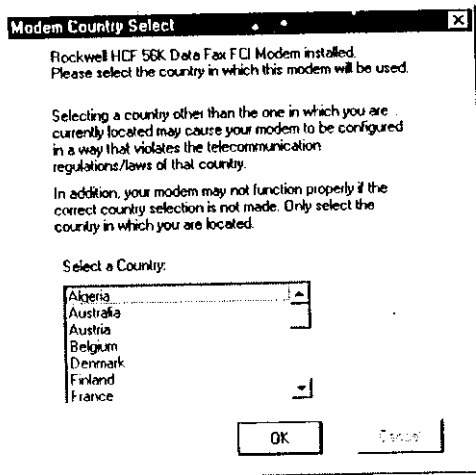
4. Copy files from:
Please type the letter of Drive you selected, then press "OK"

Click "OK"



5. Select the country you need, then press "OK".

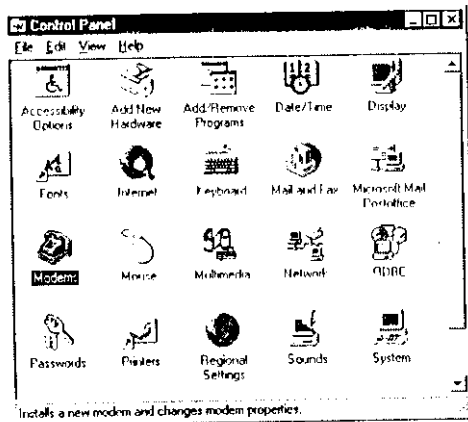
Click "OK"



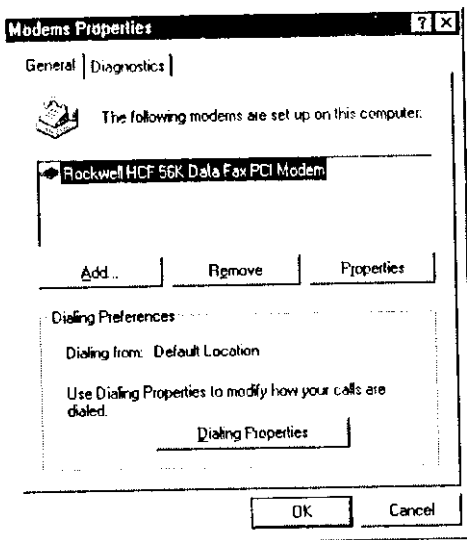
6. Proceed to Section 2.2.4.

2.2.4 Checking Modem Functionality

1. Start Windows 95 ==> Click "Start" ==> "Settings" ==> "Control Panel" ==> "Modem".

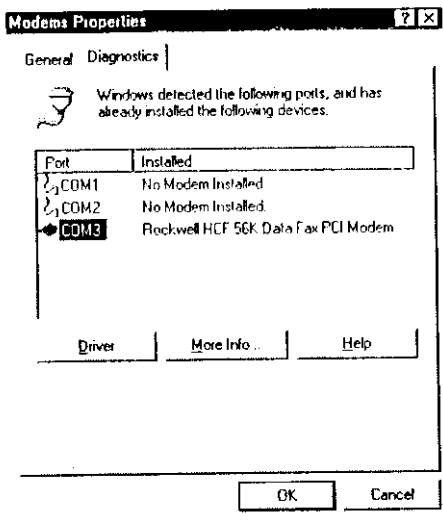


2. Click "General" and highlight "Rockwell HCF 56K Data Fax PCI Modem" as shown below.

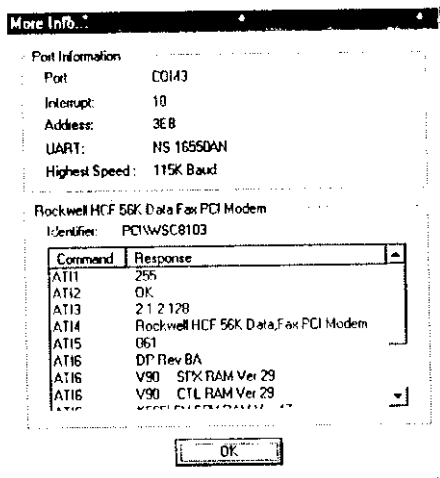


3. Click "Diagnostic" and highlight the designated COM as shown below. Click "More Info ..." and the system will communicate with the modem.

Click
" More Info "

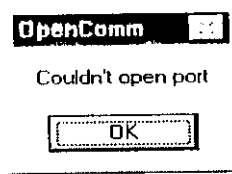


Click " OK "



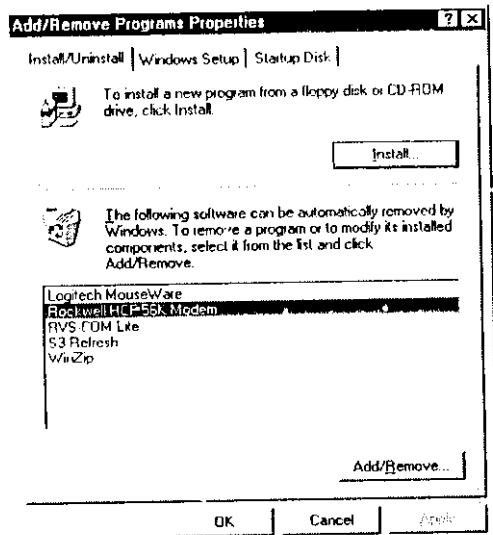
If there is no error message, then your modem is set-up properly and is functional.

If you have the error message "Couldn't Open Port", please follow the instructions in Section 2.2.5.

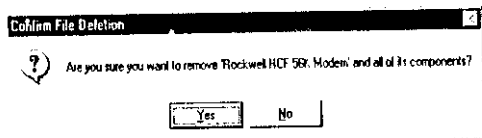


2.2.5 Correcting "Can't Open Port" Message

1. Click "Start" ==> "Settings" ==> "Control Panel" ==> "Add/Remove" and select "Rockwell HCF 56K Modem", then click "Add/Remove ..."



Click "YES "



2. Restart Windows 95 and follow the instructions starting from Section 2.2.2

Section Three - Installing and Configuring Communication Software

NOTE: Install the communication software according to the software user's manual. Be certain that your software is configured to communicate with the modem on the same COM port and IRQ line used by the modem.

You may be prompted by the software to configure certain communication parameters. We suggest the following settings:

Baud rate: 115,200 bps	Data bits: 8
Parity: None	Stop bit: 1
Flow Control: RTS/CTS	Initialization string: AT&F

Select a **Rockwell** modem type if prompted by your data communications software. Select **Generic Class 1** or **Rockwell** modem type when prompted by your Fax or Voice software.

3.1 Accessing the Fax / Voice / Speakerphone Functions

The Fax, Voice, Speakerphone and DSVD functions of your modem are application driven and are accessed only through application software. Consult your software manual regarding procedures on using these features.

3.2 Using Your Modem

Common modem functions (i.e. dialing, file transfer, faxing) are performed by using communication software in conjunction with the modem.

NOTE: The communication software included with your modem provides a user friendly interface for all common modem functions and should be sufficient for all of your communication needs.

The modem may also perform basic communication functions (such as dialing) via the **AT** commands. A list and description of all **AT** commands appear in *Section Five*. Since the communication software is designed to shield the user from the difficult and cumbersome **AT** commands, we strongly suggest that all modem operations be performed via the software.

3.3 Where To Go From Here

If you have difficulties getting your modem to work, read *Section Four* to find information as well as answers to commonly asked questions and problems concerning the communication software. Sections Five through Ten contain reference material (AT commands, S-register, and Result-codes, etc.) and can be skipped.

NOTE: *It is important that you familiarize yourself with the functions available from the included software by reading its manual (you may also use any other commercially available communication software). The software manual includes detailed information on all common modem functions.*

Section Four - Troubleshooting Communication Software

Your modem is designed to provide reliable and trouble-free service. Should you experience any difficulty, however, the information contained in this section will assist you in determining and resolving the source of the difficulty. If you cannot resolve your difficulty after reading this chapter, contact your dealer or vendor for assistance.

4.1 Modem does not respond to commands.

1. Make sure the modem is not configured with a conflicting COM port and IRQ setting. If another device in your system is also configured as the same COM port, it will not work. Similarly, IRQ settings may not overlap.
2. Make sure the communication software is configured with the correct COM and IRQ settings (same COM port and IRQ line as the modem). Your communication software will not be able to send-to and receive-from your modem any data if it does not have the correct COM and IRQ settings of the modem.
3. Make sure the modem is properly initialized by the communication software. Your modem may have been improperly initialized by the software because you have selected an incorrect modem type. Select "Rockwell" modem type in your data communication software (select "Generic class 1" and "Rockwell" in your Fax software, respectively). You may also be prompted to enter an initialization string by the software. Use AT&F as your initialization string.
4. If you are running Microsoft® Windows 95, make sure that the modem is properly configured in Windows (see Section 2.2.2)

4.2 Modem dials, but does not connect.

1. Make sure the COM port setting is identical on both the system and the software.
2. Make sure the phone line is working properly. A noisy line will prevent proper modem operation.

4.3 Modem makes a connection, but no data appears on your screen.

1. Make sure all communication parameters (baud rate, data, stop, and parity bits) are properly configured and identical on both sides. Be certain hardware flow control (RTS/CTS - default) is enabled in both the modem and the communication software.

2. Press the **ENTER** key several times. The remote system may be waiting to receive your data before it begins.
3. Make sure the correct terminal emulation mode is being used in the software (refer to software manual).

4.4 Modem experiences errors while online with a remote modem.

1. Make sure Call Waiting is turned off.
2. Make sure RTS/CTS hardware flow control is enabled.



Do not use XON/XOFF software flow control when transferring binary

3. Make sure the data speed is not faster than your computer's capability. Most IBM compatibles are capable of 19,200bps under DOS and Windows 3.x. Operating at higher speeds under Windows 95 requires a faster CPU (Pentium 100MHz or better).

4.5 Modem exhibits poor voice record or playback.

1. Make sure the correct modem type is selected in the Voice/Fax software. Use "**Rockwell**" or similar selection. Do not select "**Cirrus Logic**" or "**Lucent**".
2. Make sure your computer is fast enough to handle voice operations (38.4Kbps). Voice operations are CPU intensive and require a Pentium 100MHz or better CPU when running under MS Windows 95.

Section Five - AT Command Set

5.1 Executing Commands

Your modem is in Command Mode upon power-on and is ready to receive and execute "AT" commands. The modem remains in Command Mode until it makes a connection with a remote modem. Commands may be sent to the modem from an attached terminal or a PC running a communication program.

This modem is designed to operate at common DTE speeds ranging from 115.2Kbps to 300bps. All commands and data must be issued to the modem using one of the valid DTE speeds.

5.2 Command Format

All commands must begin with the **AT** prefix, followed by the command letter and ended with the **ENTER** key. Spaces are allowed in the command string to increase command line readability, but are ignored by the modem during command execution. All commands may be typed in either upper or lower case, but not mixed. A command issued without any parameters is considered as specifying the same command with a parameter of "0".

Example: **ATL [ENTER]**

This command causes your modem to lower its speaker volume.

5.3 AT Commands

All default settings are printed in **bold text**.

<u>Command</u>	<u>Function</u>
A	Answer incoming call
A/	Repeat Last command. [ENTER]
Dn	0 - 9, A-D, # and *
L	Redial last number
P	Pulse dial
T	Tone dial
W	Wait for second dial tone
,	Pause
@	wait for 5 seconds of silence
!	flash
:	return to command mode after dialing
E0	Command echo disabled
E1	Command echo enabled

+++	Escape characters-switch from Data Mode to Command Mode
H0	Modem on-hook (hang-up)
H1	Modem off-hook (make busy)
In	Report Identification information (n=0-7)
L0	Speaker OFF
L1	Low speaker volume
L2	Medium speaker volume
L3	High speaker volume
M0	Speaker always off
M1	Speaker on until carrier detected
M2	Speaker always on
M3	Speaker off during dialing, on until carrier detected
O0	Return to Data Mode
O1	Initiate a retrain and return to Data Mode
P	Pulse dial
Q0	Result code enabled
Q1	Result code disabled
Sr?	Read S-register r. Refer to Chapter 7 for details
Sr=n	Set S-register r to value n. Refer to Chapter 7 for details
T	Tone dial
V0	Numeric responses
V1	Text responses
X0	Enables CONNECT result code only. Dial tone and busy detection are disabled
X1	Same as X0 plus all CONNECT responses/blind dialing
X2	Enables all CONNECT <speed> result code. Dial tone detection is enabled, but busy detection is disabled
X3	Enables all CONNECT <speed> result code. Dial tone detection is disabled. But busy detection is enabled
X4	Enables all CONNECT <speed> result code. Dial tone and busy detection are both enabled
Z	Reset and recall configuration profile
&C0	Carrier detect always ON
&C1	Turn on CD when remote carrier is present
&D0	DTR signal ignored
&D1	Modem return to Command Mode after DTR toggle
&D2	Modem hangs up and return to Command Mode after DTR toggle
&F	Load factory default configuration profile
&P0	Set pulse dial to 39%/61% make/break ratio @ 10 pps
&P1	Set pulse dial to 33%/67% make/break ratio @ 10 pps

&P2 Set pulse dial to 39%/61% make/break ratio @
20 pps

&P3 Set pulse dial to 33%/67% make/break ratio @
20 pps

&V Report current configuration and stored profile

&W Store current configuration

+MS=a,b,c,d,e,f

Select Modulation

Parameter a specifies the modulation protocol as B103, B212, V21,V22, V22B, V23C, V32, V32B, V34 or K56FLEX, V90

Parameter b specifies automode operation, where
0 = automode disabled,
1 = automode enabled.

Parameter c specifies the lowest transmit speed for connection.

Parameter d specifies the highest transmit speed for connection.

Parameter e specifies the lowest receive speed for connection.

Parameter f specifies the highest receive speed for connection.

The default is +MS=V90, 1, 75, 33600, 75, 56000

+MR=0 Modulation connection reporting disabled

+MR=1 Modulation connection reporting enabled

+ES=a,b,c

Select error control and synchronous access mode

Parameter a specifies the initial requested mode when modem originates a call, where

- 0 = initiate call with direct mode
- 1 = initiate call with normal mode
- 2 = initiate call with V.42 without detection phase
- 3 = initiate call with V.42 with detection phase
- 4 = initiate call with MNP mode
- 6 = initiate call with V.80 synchronous access mode

Parameter b specifies the acceptable fallback mode when modem originates a call, where

- 0 = LAPM, MNP or normal mode
- 2 = LAPM or MNP mode
- 3 = LAPM mode only
- 4 = MNP mode only

Parameter c specifies the acceptable fallback mode when modem answers a call or specifies V.80 synchronous access mode where

- 1 = Normal mode
- 2 = LAPM, MNP or normal mode
- 4 = LAPM or MNP mode
- 5 = LAPM mode only
- 6 = MNP mode only

8 = answer call with V.80 synchronous access mode

The default is +ES=3,0,2

Error control reporting disabled

Error control reporting enabled

Select data compression parameter

Parameter a specifies the desired direction of data compression, where

0 = data compression disabled

1 = both direction data compression enabled

Parameter b specifies whether or not the modem whether or not the modem should continue to operate if the result is not obtained, where

0 = don't disconnect

Parameter c specifies the maximum number of dictionary entries.

+ER=0

+ER=1

+DS=a,b,c,d

Section Six - S Register Summary

Your modem has 16 registers, designated S0 through S89. Table 6-1 shows the registers, their functions, and their default values. Some registers can have their values changed by commands. If you use a command to change a register value, the command remains in effect until you turn off or reset your modem. Your modem then reverts to the operating characteristics specified in its nonvolatile memory. Refer to Section Five for information on how to use the AT commands to manipulate the S registers.

NOTE: *The default value and range of some S-registers listed below could vary with country.*

Table 6-1 S - Registers

<u>Register</u>	<u>Function</u>	<u>Range/units</u>	<u>Default</u>
S0	Auto-answer Ring	0-255 /rings	0
S1	Ring counter	0-255 /rings	0
S2	Escape code character	0-255 /ASCII	43
S3	Carriage return character	0-127 /ASCII	13
S4	Line feed character	0-127 /ASCII	10
S5	Backspace character	0-32,127 /ASCII	8
S6	Dial tone wait time	2-255 /seconds	2
S7	Remote carrier wait time	1-255 /seconds	50
S8	Comma pause time	0-255 /seconds	2
S10	Carrier loss time	1-255/0.1 second	14
S11	Touch-tone dialing speed	50-255 /milliseconds	95
S12	Escape character guard time	0-255 /0.02 second	50

Section Seven - Result Code Summary

OK	0	CONNECT	1
RING	2	NO CARRIER	3
ERROR	4	CONNECT 1200 E	5
NO DIALTONE	6	BUSY	7
NO ANSWER	8	CONNECT xxxxx*	10
DELAYED	24	BLACKLISTED	32
FAX	33	DATA	35
+FC ERROR	+F4		

NOTE: * For x1, x2, x3 and x4 the modem send this result code when the DTE speed is xxxxx bps

Section Eight - Specifications

Modulation std.: V.90, K56flex, V.34+, V.34, V.32bis, V.32, V.29, V.27ter, V.22bis, V.23, V.22, V.21, V.17, Bell 212 / 103.

Compression: V.42bis, MNP Class 5

Error Correction: V.42, MNP Classes 2-4

FAX Group: Group III

FAX Command: TIA/EIA 578 class 1

Transmit level: -12 dBm +/- 1 dB (vary with country)

UART: 16550 compatible

Power: .75 W max

Temperature: 0 to 55 degrees C, operating; -20 to 80 degrees C, non-operating

INFORMATION TO THE USER

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: 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.

This booklet is available from the US government Printing Office
*Washington, DC 20402, Stock NO. 004-000-00345-4.

CAUTION: Any changes of modifications not expressly approved by the grantee of this device could void the users authority to operate the equipment.