

EUT:FAX MODEM

FCC ID:H52PT-3020

Puretek Industrial co., LTD.

User's Manual

FEDERAL COMMUNICATIONS COMMISSION

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. This equipment generates, uses and can radiated 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.

Shielded interface cables must be used in order to comply with emission limits.

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

1

ATTN: Please be advised that this FAX MODEM is only certified for use by the Federal Communications Commission for the FCC ID:H52PT-3020 in the Installing of External Modem.

The user should disregard any information in the users manual about any other Installing of Internal Modem.

Table of Contents

| | |
|---|----|
| Chapter 1 Introduction | 1 |
| Your Modem | 1 |
| 1. External Modem | 1 |
| 2. Internal Modem Card | 2 |
| Features | 2 |
| Data | 2 |
| Fax | 3 |
| Voice | 3 |
| Chapter 2 Installations | 4 |
| 1. Installing External Modem | 4 |
| 2. Installing Internal Modem | 5 |
| 2-1. Jumper Setting | 5 |
| 2-1-1. For Non-Voice Modem | 6 |
| 2-1-2. For Voice Modem 33.6K Version | 6 |
| 2-1-3. For Voice Modem 56K Version | 6 |
| 2-2. Installing your Internal modem card | 7 |
| 3. Installation procedure for Windows 95 | 8 |
| 3-1. For Plug and Play User | 8 |
| 3-2. For Non Plug and Play User | 9 |
| 4. Installation of Communication Software | 10 |
| Chapter 3 Commands | 11 |
| When you typing commands | 11 |
| AT commands | 11 |
| Voice Command Summary | 21 |
| Using AudioSpan/DSVD Function | 22 |
| Result Codes | 24 |
| S-Register Definitions | 31 |
| Chapter 4 Troubleshooting | 36 |

Chapter 1 Introduction

The Voice/Fax/Data Modem connects your computer to Internet, and all kinds of BBS, and other popular Fax/Modems. This manual describes the features, procedures of installations, and AT command set...etc. of this modem.

Your modem...

There are indicator lights and connectors on the front and back side of this modem. Following is the meaning of these light and connectors for your reference:

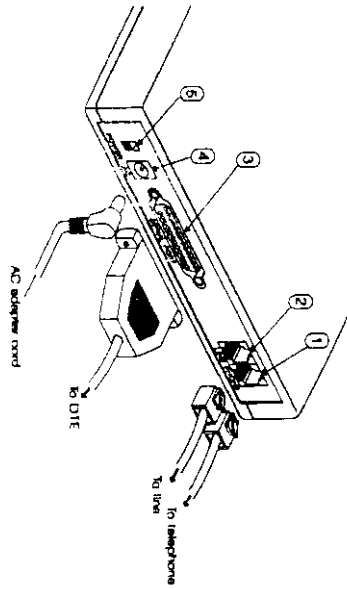
1. External Modem

1-1. External Front Panel

| | | |
|-----|---|--------------------------------|
| MIC | : | Microphone jack. |
| SPK | : | Speaker jack. |
| RD | : | Received Data indicator. |
| TD | : | Transmitted Data indicator. |
| CD | : | Carrier Detect indicator. |
| OH | : | Off Hook. |
| AA | : | Auto Answer indicator. |
| HS | : | High baudrate Speed indicator. |
| DTR | : | DTR signal indicator. |
| MR | : | Modem Ready. |
| PW | : | Power on indicator. |

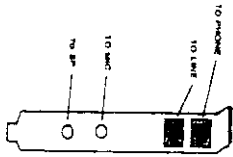
1-2. External Rear Panel

| | | |
|-----------|---|----------------------|
| 1. PHONE | : | Phone jack. |
| 2. LINE | : | Telephone line jack. |
| 3. RS232 | : | RS232 cable socket. |
| 4. AC-IN | : | AC adapter input. |
| 5. ON/OFF | : | Power switch. |



2. Internal Modem Card(bracket)

- PHONE: Phone Jack.
- LINE: Telephone line Jack.
- MIC: Microphone Jack.
- SPK: Speaker(for Stereo only) Jack.



Features

This modem supports the following communication standards:

Note: ITU-T is known as CCITT.

Data

- ITU-T V.90(For 56Kbps Modem only)
- Rockwell K56flex(For 56Kbps Modem only)
- ITU-T V.34, V.32bis, V.32, V.22bis, V.22
- Bell 103 & 212A
- V.42bis & MNP 5 (Data compression)
- V.42 & MNP2-4 (Error correction)

- Fax**
- V.17(14400bps FAX)
- V.29(9600bps FAX)
- V.27ter(4800bps FAX)

- Voice**
- Voice/Audio mode
- Full-Duplex speakerphone
- AudioSpan (Simultaneous Audio/Voice/Data; SAVD)

NOTE

Chapter 2 Installations

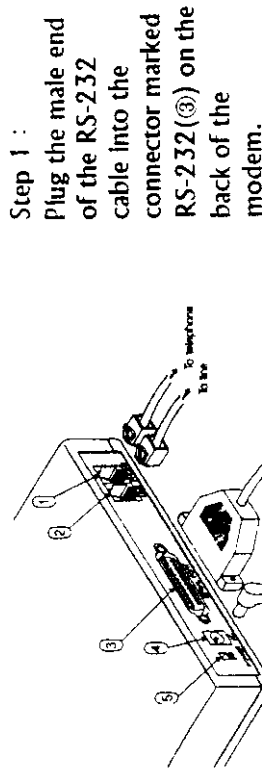
This chapter describes the steps how to install and power on your fax modem.

Note: Do not power on your modem before you finishing the following installation.

1. Installing External Modem

If your modem is external one, please refer to following procedure:

- 33,600/56,000bps external Fax/Modem
- 33,600/56,000bps external Voice/Fax/Modem



Step 1 :

Plug the male end of the RS-232 cable into the connector marked RS-232 (3) on the back of the modem.

Step 2 :

Plug the other end of this cable into the serial port on the back of your computer.

Step 3 : (Be sure your modem is Power off)

Plug the power cable into the AC-IN connector (4) on the back of the modem.

Step 4 :

Plug the power adapter into a wall outlet.

Step 5 :

Plug one end of the phone cable into the modem's LINE Jack (2). Plug the other end into the phone outlet.

Step 6 :

To use telephone and the modem on the same line, plug one end of the optional phone cable into the PHONE Jack (1) on the modem; plug the other end into the phone. Lift the telephone handset and listen for a DIALTONE to check the connection.

Step 7 :

Turn your modem on (5). The PW, MR lights should light up.

Step 8 :

Turn your computer on.

2. Installing Internal Modem

If your modem is internal fax modem card, please refer to the following procedure:

- 33,600/56,000bps Internal Fax/Modem
- 33,600/56,000bps Internal Voice/Fax/Modem

2-1. Jumper Setting

Before the installing of your internal modem card, please make sure your jumper setting is correct. The jumpers default setting of your modem is at COM 4 and IRQ3. 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 and IRQ, the jumpers should be set as follows:

Chapter 2 Installations

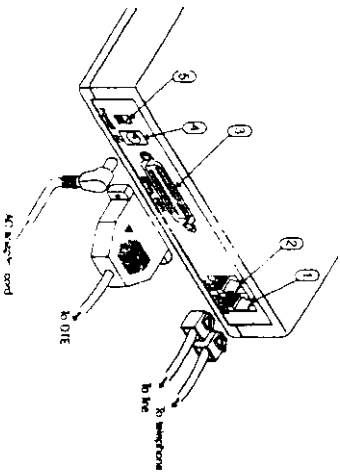
This chapter describes the steps how to install and power on your fax modem.

Note: Do not power on your modem before you finishing the following installation.

1. Installing External Modem

If your modem is external one, please refer to following procedure:

- 33,600/56,000bps external Fax/Modem
- 33,600/56,000bps external Voice/Fax/Modem



Step 1 :
Plug the male end
of the RS-232
cable into the
connector marked
RS-232(3) on the
back of the
modem.

Step 2 :
Plug the other end
of this cable into the serial port on the back of your computer.

Step 3 : (Be sure your modem is Power off)
Plug the power cable into the AC-IN connector(1) on the back of
the modem.

Step 4 :
Plug the power adapter into a wall outlet.

Step 5 :
Plug one end of the phone cable into the modem's LINE Jack(2).
Plug the other end into the phone outlet.

Step 6 :
To use telephone and the modem on the same line, plug one end of
the optional phone cable into the PHONE Jack(1) on the modem;
plug the other end into the phone. Lift the telephone handset and
listen for a DIALTONE to check the connection.

Step 7 :
Turn your modem on(5). The PW, MR lights should light up.

Step 8 :
Turn your computer on.

2. Installing Internal Modem

If your modem is internal fax modem card, please refer to the following
procedure:

- 33,600/56,000bps Internal Fax/Modem
- 33,600/56,000bps Internal Voice/Fax/Modem

2-1. Jumper Setting

Before the installing of your internal modem card, please make sure
your jumper setting is correct. The jumpers default setting of your
modem is at COM 4 and IRQ3. 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 and
IRQ, the jumpers should be set as follows:

2-1-1. For Non-Voice Modem

SI : 1 2 3 4 5 6

| PORT | COM | IRQ3 | IRQ4 | IRQ5 | IRQ7 | Base Address |
|------|-----|------|------|------|------|--------------|
| COM1 | S | O | S | O | O | 03F8 IRQ4 |
| COM2 | O | S | O | O | O | 02F8 IRQ3 |
| COM3 | S | O | S | O | O | 03E8 IRQ4 |
| COM4 | O | S | O | O | O | 02E8 IRQ3 |
| COM2 | O | S | O | S | O | 02F8 IRQ5 |

Note :

1. S : Jumper short; O : Jumper open
2. If I/O conflict with other device, IRQ can be setting at 5,7

2-1-2. For Voice Modem 33.6K Version (68pin main chip)

SW1: 0 1 2 3 4 5 6 7 8

| PORT | COM | IRQ3 | IRQ4 | IRQ5 | IRQ7 | PNP | PNP | Base Address |
|------|-----|------|------|------|------|-----|-----|--------------|
| COM1 | S | S | O | S | O | O | O | 03F8 IRQ4 |
| COM2 | S | O | S | O | O | O | O | 02F8 IRQ3 |
| COM3 | S | O | S | O | O | O | O | 03E8 IRQ4 |
| COM4 | S | O | S | O | O | O | O | 02E8 IRQ3 |
| PnP | O | O | O | O | O | S | S | 03F8-02E8 |

Note :

1. S : Jumper short; O : Jumper open
2. If I/O conflict with other device, IRQ can be setting at 5,7

2-1-3. For Voice Modem 56K Version (84pin main chip)

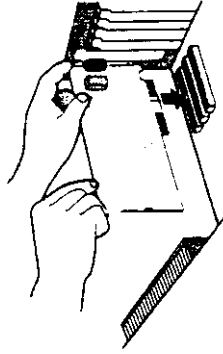
Jp1 : 1 2 3 4 5 6 7

| PORT | COM | IRQ3 | IRQ4 | IRQ5 | IRQ7 | IRQ9 | Base Address |
|------|-----|------|------|------|------|------|--------------|
| COM1 | S | O | S | O | O | O | 03F8 IRQ4 |
| COM2 | O | S | O | O | O | O | 02F8 IRQ3 |
| COM3 | S | O | S | O | O | O | 03E8 IRQ4 |
| COM4 | O | S | O | O | O | O | 02E8 IRQ3 |
| COM2 | O | S | O | S | O | O | 02F8 IRQ5 |

Note :

1. S : Jumper short; O : Jumper open
2. If I/O conflict with other device, IRQ can be setting 5,7,9

2-2. Installing your Internal modem card



Step 1 :
Turn off your computer.
Carefully remove the cover from the computer and select a slot for your modem.

Step 2 :
Determine how many serial ports are built into your computer. The internal modem COM port setting defaults is in COM 4, so do not conflict with COM port existed in your computer.

Step 3 :
Carefully slide the internal modem into the slot applying with pressure until the internal modem is completely plugged into the slot.

Step 4 :
Replace the slot cover screw to secure the modem and replace the computer's cover.

Step 5 :
Connect the phone cable from modem's LINE connector to the phone outlet.

Step 6 :
You can also connect your telephone to the modem's PHONE jack optionally.

Step 7 :
Turn on your computer and your modem is now installed.

3. Installation Procedure for Windows 95

☞ Note: Win '95 drivers on the CD root directory.

3-1. For Plug and Play User

- Step 1 :
Set jumpers for PnP mode.
- Step 2 :
Turn on the PLUG AND PLAY feature on your system BIOS for initializing the PnP device.
- Step 3 :
The "CARD-xx 33600bps Internal Fax Voice Modem" will be shown on your screen when system boots up with PnP internal modem.
- Step 4 :
The "33600bps Internal Fax Voice Modem" message will be shown on your screen when you boot up Win '95 with Rockwell PnP internal modem in the first time.
- Step 5 :
Select the option.
• Driver from disk provided by hardware manufacturer.
- Step 6 :
Put your driver diskette into floppy A: or B: and click "OK". If your driver is CD version, please put it into CD ROM driver. The computer will automatically setup your Modem model as PnP ID setup.

Step 7 :
The PnP modem setup is completed now.

3-2. For Non Plug and Play User

We have set your Internal modem to use COM 4 and IRQ 3 (Jumper 3 ON). This is the Industry standard for modem settings. In most cases, this setting will work. In some instances, however, this setting is already being used by another COM port, such as a sound card or another accessory. We recommend that you check your system to determine what setting your modem should use.

- Step 1 :
Turn off your computer and unplug it from the electrical outlet. Remove the screws from your computer's cover and then remove the cover, find an empty ISA expansion slot that's at least as long as the gold edge of your modem, push the modem down as gently as possible until it snaps into the expansion slot. Put the computer's cover back and fasten it with the screws.
- Step 2 :
Start Windows 95.
- Step 3 :
• Double-click on the "My Computer" icon.
• Double-click on the "Control Panel" icon.
• Double-click on the "Add New Hardware" icon.
Then
The "Add New Hardware Wizard" utility will pop-up.
Click "Next" button 3 times. Then windows will now look for your new hardware. When finished detecting hardware. Click "Finish" button. Then Restart the computer.
- Step 4 :
• Double-click on the "My Computer" icon.

- Double-click on the "Control Panel" icon.
- Double-click on the "Modems" icon. Then the "Install New Modem" window will pop-up.
- Mark "Don't run the Hardware Installation Wizard". Then click "Next" button. (This message only appear in Windows 95 OSR2 version)
- Mark "Don't detect my modem; I will select it from a list". Then click "Next" button.
- Select "Have Disk" button and insert the Driver Disk into floppy A: or B: then select "OK". If your driver is CD version, please put it into CD ROM driver.
- Select Correct Driver, then click "OK".

Step 5:

- The screen will show the modem model list, then select your modem model.

Example : 33600bps Internal Fax Modem.

And select "Next".

- Then select "Communication Port (COM 4)".
- Select "Next".
- Select "Finish".

Step 6:

The modem setup is completed now.

4. Installation of Communication Software

Please refer to your software manual when you are installing software. Your software must be configured to communicate with the modem on the same COM port and IRQ line used by the modem. Please refer to your software manual for detail procedures.

Chapter 3 Commands

Most people use the communication software programs to tell modem what they want the modem to do. Therefore, you may not use the commands in this chapter. However, if you prefer to communicate with your modem directly, you can type the following commands. Please note that when your type appears on the screen, your modem is in a "terminal mode". This chapter will be helpful if you like to work in a terminal mode.

When you typing commands...

- Use the BACKSPACE key to delete typing errors.
- Every command (except A/ and + + +) must begin with the AT or at prefix and be entered by pressing the ENTER key. For example, to execute the V command, you would type A TV and 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 ATE1.
- 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.
- All defaults are based on the &F Hardware Flow Control template load in NVRAM when the modem is shipped.

AT Commands

- A/ Re-executes the last issued command. Used mainly to redial.
- A Go off-hook and attempt to answer a call.

Commands

Commands

| | | | |
|-----|---|----|--|
| AT? | Read Selected S-Register. This command reads and displays the selected S-Register. An S-Register can be selected by using the ATSn command. | : | following ", " |
| Bn | Bell/TELT answer sequence. | ^ | Return to command mode after dialing. Toggles calling tone enable/disable. |
| B0 | Select V.22 connection at 1200bps. | En | Command Echo |
| B1 | Select Bell 212A connection at 1200bps. | E0 | Disable command echo. |
| Cn | Carrier Control | E1 | Enable command echo. |
| C1 | Return OK message. | Hn | Disconnect (Hang-up) |
| Dn | Dial | H0 | Hang up(goes on-hook) |
| 0-9 | DTMF digits 0 to 9. | H1 | Go off-hook. |
| * | The 'star' digit (tone dialing only). | In | Identification |
| # | The 'gate' digit (tone dialing only). | I0 | Report product code. |
| A-D | DTMF digits A, B, C, and D. Some countries may prohibit sending of these digits during dialing. | I1 | Report "OK". |
| L | Re-dial last number: the modem will re-dial the last valid telephone number. The L must be immediately after the D with all the following characters ignored. | I2 | Report "OK" or "ERROR". |
| P | Pulse (rotary) dial. | I3 | Report firmware revision. |
| T | Tone dial. | I4 | Report OEM defined identifier string. |
| R | This command will be accepted, but not acted on. | I6 | Report modem data pump model and internal code revision. |
| S=n | Dial the number stored in the directory (n=0 to 3). (See ATZ.) | Ln | Speaker Volume |
| I | Flashes line switch hook. | L0 | Speaker off |
| W | Wait for second dial tone (X3 or higher); linked to S6 register. | L1 | Set low speaker volume. |
| @ | Dials, waits for quiet answer, and continues (X3 or higher). | L2 | Set medium volume. |
| . | Dial pause: the modem will pause for a time specified by S8 before dialling the digits | L3 | Set high volume. |
| | | Mn | Speaker Control |
| | | M0 | Speaker is always off. |
| | | M1 | Speaker ON until CONNECT. |
| | | M2 | Speaker is always on. |
| | | M3 | Speaker off during dialing and receiving carrier and turn speaker on during answering. |
| | | Nn | Automode Enable |

| | |
|--------|---|
| N0 | Turn off automode detection. |
| N1 | Turn on automode detection. |
| On | Return to On-Line Data Mode |
| O0 | Go off-line. |
| O1 | Go on-line and retrain. |
| P | Set Pulse Dial(for phone line that don't support touch-tone dialing) |
| Qn | Quiet Results Codes Control. |
| Q0 | Allow result codes to DTE. |
| Q1 | Inhibit result codes to DTE. |
| Sr = n | Set register r to n |
| Sn? | Display contents of S-Register n |
| T | Set Tone Dial |
| Vn | Result Code Form |
| V0 | Numeric codes. |
| V1 | Verbal codes. |
| Wn | Connect Message Control |
| W0 | Report DTE speed in EC mode. |
| W1 | Report line speed, EC protocol and DTE speed. |
| W2 | Report DCE speed in EC mode. |
| Xn | Extended Result Codes |
| X0 | Report basic call progress result code, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER and ERROR. |
| X1 | Report basic call progress result codes and connections speed OK, CONNECT, RING, NO |

| | |
|-----|--|
| X2 | CARRIER, NO ANSWER, CONNECT XXXX and ERROR. Report basic call progress result codes and connections speeds, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX and ERROR. |
| X3 | Report basic call progress result codes and connections rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, ERROR. |
| X4 | Report all call progress result codes and connection rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, ERROR and NO DIAL TONE. |
| Yn | Long Space Disconnect |
| Y0 | Disable long space disconnect before on-hook. |
| Y1 | Enable long space disconnect. before on-hook. |
| Zn | Soft Reset and Restore Profile |
| Z0 | Restore stored profile 0 after warm reset. |
| Z1 | Restore stored profile 1 after warm reset. |
| &Cn | Control Carrier Detect (CD) signal |
| &C0 | CD override. |
| &C1 | Normal CD operations. |
| &Dn | DTR Option |
| &D0 | Ignore an on-to-off transition of DTR. |
| &D1 | Switch to on-line command mode without disconnection. |
| &D2 | Normal DTR operations. |
| &D3 | Modem re-initialized. &Y determines which profile is loaded. |

Commands

- &xFn Load Factory Configuration (Profile)
- &xF0 Restore factory configuration 0.
- &xF1 Restore factory configuration 1.
- &Gn Select Guard Tone
- &G0 Disable guard tone. (for USA area)
- &G1 Disable guard tone.
- &G2 Select 1300Hz guard tone.
- &Kn Flow Control
- &K0 Disable flow control.
- &K3 Enable RTS/CTS flow control. (Default for data modem modes)
- &K4 Enable XON/XOFF flow control.
- &K5 Enable transparent XON/XOFF flow control.
- &K6 Enable both RTS/CTS and XON/XOFF flow control. (Default for fax modem modes.)
- &Mn Asynchronous/Synchronous Mode Selection
- &M0 Select direct asynchronous operation.
- &M1 Select asynchronous connect mode with asynchronous off-line command mode.
- &M2 Select synchronous connect mode with asynchronous off-line command mode.
- &M3 Select synchronous connect mode.
- &On Sync/Async Mode
- &O0 Select direct asynchronous operation.
- &O4 Select Hayes AutoSync mode. (Optional)
- &O5 Modem negotiates an error-corrected link.
- &O6 Select asynchronous operation in normal mode.
- &Rn RTS/CTS Option
- &R0 CTS tracks RTS (async) or acts per V.25 (sync).
- &R1 CTS is always active.

Commands

- &Sn DSR Override
- &S0 DSR is always active.
- &S1 DSR acts per V.25.
- &V Display Current Configuration
- &V1 Display Last Connection Statistics
- &Wn Store Current Configuration
- &W0 Store the current configuration as profile 0.
- &W1 Store the current configuration as profile 1.
- &Yn Designate a Default Reset Profile
- &Y0 The modem will use profile 0.
- &Y1 The modem will use profile 1.
- &Zn = x Store telephone number
- &Zn = x n = 0 to 3 and string.
- %Cn Enable/Disable Data Compression
- %C0 Disable data compression.
- %C1 Enable MNP 5 data compression.
- %C2 Enable V.42bis data compression.
- %C3 Enable both V.42bis and MNP 5 data compression.
- %En Enable/Disable Line Quality Monitor and Auto-Retrain or Fallback/Fall Forward
- %E0 Disable line quality monitor and auto-retrain.
- %E1 Enable line quality monitor and auto-retrain.
- %E2 Enable line quality monitor and fallback/fall forward.
- %L Line Signal Level
- Return a value which indicates the received signal level. The value returned is direct indication of the receive level. For example, 009 = -9dBm,

043 = -43dBm, and so on.

%Q

Line Signal Quality
Report the line signal quality. Returns the higher order byte of the EQM value. Based on the EQM value, retrain or fallback/fall forward may be initiated if enabled by %E1 or %E2.

Example:
AT%Q
015

%Un
%U0
%U1

Select u-LAW or A-LAW(For K56flex modem only)
Select u-LAW
Select A-LAW

\An
\A0
\A1
\A2
\A3

Select Maximum MNP Block Size
64 characters.
128 characters.
192 characters.
256 characters.

\Bn
\B1-\B9

Transmit Break to Remote
Break length in 100 ms units. (Default = 3.)
(Non-error corrected mode only.)

\Nn
\N0
\N2
\N3
\N4
\N5

Operating Mode
Select normal speed buffered mode.
Select reliable (error-correction) link mode.
Select auto reliable mode.
Force LAPM error-correction mode.
Force MNP error-correction mode.

+MS

Select Modulation
This command selects the modulation, optionally enables or disables automode, and optionally

specifies the lowest and highest connection rates using one to four subparameters.

The format is:

AT+MS=<mode>,<automode>,<min_rate>,<max_rate>

| Mod | Modulation | Data Rates (bps) |
|-----|------------|---|
| 0 | V.21 | 300 |
| 1 | V.22 | 1200 |
| 2 | V.22bis | 2400, 1200 |
| 3 | V.23 | 1200 |
| 9 | V.32 | 9600, 4800 |
| 10 | V.32bis | 14400, 1200, 9600, 7200, 4800 |
| 11 | V.34 | 33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400 |
| 12 | V.90 | 56000, 54667, 53333, 52000, 50667, 49333, 48000, 46667, 45333, 42667, 41333, 40000, 38667, 37333, 36000, 34667, 33333, 32000, 30667, 29333, 28000 |
| 56 | K56flex | 56000, 54000, 52000, 50000, 48000, 46000, 44000, 42000, 40000, 38000, 36000, 34000, 32000 |
| 64 | Bell 103 | 300 |
| 68 | Bell 212 | 1200 |

Note : V.90 and K56flex for 56,000bps Voice/Fax/Data Modem only

| < automode > | Option Selected |
|--------------|-------------------|
| 0 | Automode disabled |
| 1 | Automode enable |

Voice Command Summary

For example:
AT+MS=11,1,300,33600
 where: 11 : select V.34
 1 : automode enable
 300 : min_rate data speed 300 bps
 33,600 : max_rate data speed 33,600 bps
 If you want to select V.34 28800 bps only, please
 Insure AT+MS=11,1,28800,28800

-SSE=n Enable/Disable DSVD (optional)

This command enables or disables DSVD (Digital Simultaneous Voice and Data) in modem supporting DSVD. The syntax is AT-SSE=n, where n is a number from 0 to 1.

-SSE=0 Disable DSVD.

-SSE=1 Enable DSVD.

-SMS=x,y,z,t Select AudioSpan/DSVD Mode(Voice modem only)

| x | Mode |
|---|--|
| 0 | Data mode |
| 1 | DSVD mode(A modem not supporting DSVD will respond with ERROR) |
| 2 | AutoSpan mode (A modem not supporting AudioSpan will respond with ERROR) |
| 3 | Automatic mode select |

y : Minimum data speed (4800) with

AudioSpan mode.

z : Maximum data speed (14400) with

AudioSpan mode.

t : Symbol rate (Default : 0. Auto selection)

| | |
|--------------|---|
| ATA | Answer in voice/audio mode. |
| ATD | Dial command in voice/audio mode. |
| ATH | Hang up in voice/audio mode. |
| ATZ | Reset from voice/audio mode. |
| #BDR | Select baud rate(turn off autobaud). |
| #CID | Enable caller ID detection and select reporting format. |
| #CLS | Select data, fax, or voice/audio. |
| #MDL | Identify model. |
| #MFR | Identify manufacturer. |
| #REV | Identify revision level. |
| #SPK | Speakerphone setting. |
| #TL | Audio output transmit level. |
| #VBRQ | Query buffer size. |
| #VBS | Bits per sample(ADPCM or PCM). |
| #VBT | Beep tone timer. |
| #VCI | Identify compression method(ADPCM). |
| #VLS | Voice line select(ADPCM or PCM). |
| #VRA | Ringback goes away timer(originate). |
| #VRN | Ringback never came timer(originate). |
| #VRX | Voice receive mode(ADPCM or PCM). |
| #VSD | Silence deletion timer(voice receive, ADPCM). |
| #VSK | Buffer skid setting. |
| #VSP | Silence detection period(voice receive, ADPCM). |
| #VSR | Sampling rate selection(ADPCM or PCM). |
| #VSS | Silence deletion timer(voice receive, ADPCM). |
| #VTD | DTMF tone reporting capability. |
| #VTM | Enable timing mark placement. |
| #VTS | Generate tone signals. |
| #VTX | Voice transmit mode(ADPCM or PCM). |

Result Codes

| Numeric | Verbose | Description |
|---------|--------------|---|
| 0 | OK | Modem successfully executed AT command. |
| 1 | CONNECT | A connection is established. |
| 2 | RING | Modem detected an incoming call. |
| 3 | NO CARRIER | Modem lost or could not detect a remote carrier signal with the register S7 time. |
| 4 | ERROR | Modem detected an error in an AT command. |
| 5 | CONNECT 1200 | Connect made at 1200bps. |
| 6 | NO DIALTONE | Modem did not detect a dial tone after off-hook. |
| 7 | BUSY | Modem detected a busy tone. |
| 8 | NO ANSWER | Modem did not detect 5 seconds of silence when using the @ dial modifier in the dial command. |
| 9 | CONNECT 600 | Connection made at 600bps. |
| 10 | CONNECT 2400 | Connection made at 2400bps. |

| | | |
|----|------------------|--|
| 11 | CONNECT 4800 | Connection made at 4800bps. |
| 12 | CONNECT 9600 | Connection made at 9600bps. |
| 13 | CONNECT 7200 | Connection made at 7200bps. |
| 14 | CONNECT 12000 | Connection made at 12000bps. |
| 15 | CONNECT 14400 | Connection made at 14400bps. |
| 16 | CONNECT 19200 | Connection made at 19200bps. |
| 17 | CONNECT 38400 | Connection made at 38400bps. |
| 18 | CONNECT 57600 | Connection made at 57600bps. |
| 19 | CONNECT 115200 | Connection made at 115200bps. |
| 20 | CONNECT 230400 | Connection made at 230400bps. |
| 22 | CONNECT 1200TX/ | Connection made at transmit 1200/75RX receive 75bps. |
| 23 | CONNECT 75TX/ | Connection made at transmit 5/1200/RX receive 1200bps. |
| 33 | FAX | Fax modem connection established. |
| 35 | DATA | Data modem connection established. |
| 40 | CARRIER 300 | Carrier rate of 300bps. |
| 44 | CARRIER 1200/75 | Carrier rate of transmit 1200 receive 75bps |
| 45 | CARRIER 75T/1200 | Carrier rate of transmit 75 receive 1200bps |

Commands

| | | |
|----|-------------------------|--|
| 46 | CARRIER 1200 | Carrier rate of 1200bps. |
| 47 | CARRIER 2400 | Carrier rate of 2400bps. |
| 48 | CARRIER 4800 | Carrier rate of 4800bps. |
| 49 | CARRIER 7200 | Carrier rate of 7200bps. |
| 50 | CARRIER 9600 | Carrier rate of 9600bps. |
| 51 | CARRIER 12000 | Carrier rate of 12000bps. |
| 52 | CARRIER 14400 | Carrier rate of 14400bps. |
| 53 | CARRIER 16800 | Carrier rate of 16800bps. |
| 54 | CARRIER 19200 | Carrier rate of 19200bps. |
| 55 | CARRIER 21600 | Carrier rate of 21600bps. |
| 56 | CARRIER 24000 | Carrier rate of 24000bps. |
| 57 | CARRIER 26400 | Carrier rate of 26400bps. |
| 58 | CARRIER 28800 | Carrier rate of 28800bps. |
| 59 | CONNECT 16800 | Connection made at 16800bps. |
| 61 | CONNECT 21600 | Connection made at 21600bps. |
| 62 | CONNECT 24000 | Connection made at 24000bps. |
| 63 | CONNECT 26400 | Connection made at 26400bps. |
| 64 | CONNECT 28800 | Connection made at 28800bps. |
| 66 | COMPRESSION: CLASS 5 | Data compression MNP CLASS 5 |
| 67 | COMPRESSION: V.42bis | Connection established. Data compression V.42bis connection established. |
| 69 | COMPRESSION: NONE | Connection established without data compression. |
| 70 | PROTOCOL: NONE | Connection established without error correction. |
| 77 | PROTOCOL: LAPM | V.42/LAPM error correction established. |

Commands

| K56flex Result Code | | |
|---------------------|---------------|--|
| Numeric | Verbose | Description |
| 78 | CARRIER 31200 | Carrier rate of 31200bps. |
| 79 | CARRIER 33600 | Carrier rate of 33600bps. |
| 80 | PROTOCOL: ALT | MNP 3-4 error correction connection established. |
| 84 | CONNECT 33600 | Connection made at 33600bps. |
| 91 | CONNECT 31200 | Connection made at 31200bps. |
| 150 | CARRIER 32000 | Carrier rate of 32000bps. |
| 151 | CARRIER 34000 | Carrier rate of 34000bps. |
| 152 | CARRIER 36000 | Carrier rate of 36000bps. |
| 153 | CARRIER 38000 | Carrier rate of 38000bps. |
| 154 | CARRIER 40000 | Carrier rate of 40000bps. |
| 155 | CARRIER 42000 | Carrier rate of 42000bps. |
| 156 | CARRIER 44000 | Carrier rate of 44000bps. |
| 157 | CARRIER 46000 | Carrier rate of 46000bps. |
| 158 | CARRIER 48000 | Carrier rate of 48000bps. |
| 159 | CARRIER 50000 | Carrier rate of 50000bps. |
| 160 | CARRIER 52000 | Carrier rate of 52000bps. |
| 161 | CARRIER 54000 | Carrier rate of 54000bps. |
| 162 | CARRIER 56000 | Carrier rate of 56000bps. |
| 165 | CONNECT 32000 | Connection made at 32000bps. |
| 166 | CONNECT 34000 | Connection made at 34000bps. |
| 167 | CONNECT 36000 | Connection made at 36000bps. |
| 168 | CONNECT 38000 | Connection made at 38000bps. |

| | | |
|-----|---------------|------------------------------|
| 188 | CARRIER 42667 | Carrier rate of 42667bps. |
| 189 | CARRIER 45333 | Carrier rate of 45333bps. |
| 190 | CARRIER 46667 | Carrier rate of 46667bps. |
| 158 | CARRIER 48000 | Carrier rate of 48000bps. |
| 191 | CARRIER 49333 | Carrier rate of 49333bps. |
| 192 | CARRIER 50667 | Carrier rate of 50667bps. |
| 160 | CARRIER 52000 | Carrier rate of 52000bps. |
| 193 | CARRIER 53333 | Carrier rate of 53333bps. |
| 194 | CARRIER 54667 | Carrier rate of 54667bps. |
| 162 | CARRIER 56000 | Carrier rate of 56000bps. |
| 180 | CONNECT 28000 | Connection made at 28000bps. |
| 181 | CONNECT 29333 | Connection made at 29333bps. |
| 182 | CONNECT 30667 | Connection made at 30667bps. |
| 165 | CONNECT 32000 | Connection made at 32000bps. |
| 183 | CONNECT 33333 | Connection made at 33333bps. |
| 184 | CONNECT 34667 | Connection made at 34667bps. |
| 167 | CONNECT 36000 | Connection made at 36000bps. |
| 185 | CONNECT 37333 | Connection made at 37333bps. |
| 186 | CONNECT 38667 | Connection made at 38667bps. |
| 169 | CONNECT 40000 | Connection made at 40000bps. |
| 187 | CONNECT 41333 | Connection made at 41333bps. |
| 171 | CONNECT 42667 | Connection made at 42667bps. |
| 189 | CONNECT 45333 | Connection made at 45333bps. |

| | | |
|-----|---------------|------------------------------|
| 169 | CONNECT 40000 | Connection made at 40000bps. |
| 170 | CONNECT 42000 | Connection made at 42000bps. |
| 171 | CONNECT 44000 | Connection made at 44000bps. |
| 172 | CONNECT 46000 | Connection made at 46000bps. |
| 173 | CONNECT 48000 | Connection made at 48000bps. |
| 174 | CONNECT 50000 | Connection made at 50000bps. |
| 175 | CONNECT 52000 | Connection made at 52000bps. |
| 176 | CONNECT 54000 | Connection made at 54000bps. |
| 177 | CONNECT 56000 | Connection made at 56000bps. |

V.90 Result Code

| Numeric | Verbose | Description |
|---------|---------------|---------------------------|
| 180 | CARRIER 28000 | Carrier rate of 28000bps. |
| 181 | CARRIER 29333 | Carrier rate of 29333bps. |
| 182 | CARRIER 30667 | Carrier rate of 30667bps. |
| 150 | CARRIER 32000 | Carrier rate of 32000bps. |
| 183 | CARRIER 33333 | Carrier rate of 33333bps. |
| 184 | CARRIER 34667 | Carrier rate of 34667bps. |
| 152 | CARRIER 36000 | Carrier rate of 36000bps. |
| 185 | CARRIER 37333 | Carrier rate of 37333bps. |
| 186 | CARRIER 38667 | Carrier rate of 38667bps. |
| 154 | CARRIER 40000 | Carrier rate of 40000bps. |
| 187 | CARRIER 41333 | Carrier rate of 41333bps. |

Commands

| | | |
|-----|---------------|---|
| 190 | CONNECT 46667 | 45333bps. Connection made at 46667bps. |
| 173 | CONNECT 48000 | Connection made at 48000bps. |
| 191 | CONNECT 49333 | Connection made at 49333bps. |
| 192 | CONNECT 50667 | Connection made at 50667bps. |
| 175 | CONNECT 52000 | Connection made at 52000bps. |
| 193 | CONNECT 53333 | Connection made at 53333bps. |
| 194 | CONNECT 54667 | Connection made at 54667bps. |
| 177 | CONNECT 56000 | Connection made at 56000bps. |

S-Register Definitions

S-Register Definitions

| | |
|----|--|
| S0 | Number of Rings to Auto-Answer The number of ring the modem waits for before it auto answer. Range: 0-255 (rings) Default: 0 |
| S1 | Ring Counter Count the number of rings before the modem answers. Range: 0-255 (rings) Default: 0 |
| S2 | Escape Character Define the character used for the three-character escape code sequence. Range: 0-255 Default: 43 ("+") |
| S3 | Carriage Return Character Define the character for carriage return. Range: 0-127 Default: 13 (Carriage Return) |
| S4 | Line Feed Character Define the character for line speed. Range: 0-127 Default: 10 (Line Feed) |
| S5 | Backspace Character Define the character for backspace. Range: 0-255 Default: 8 (Backspace) |
| S6 | Wait Time Before Blind Dialing The time to pause after off-hook before blind dialing. Range: 2-255 Default: 2 (Country dependent) |

| | |
|-----|---|
| S7 | Waiting Time Before Carrier Detect The time to wait for a carrier from the remote modem before hanging up. Range: 1-255 Default: 50 (seconds) Pause Time For Dial Delay The time to pause for the pause dial modifier, "Comma". Range: 0-255 Default: 2(seconds) Carrier Detect Response Time The time a signal is detected an qualified as a carrier. This timing lets your modem ignore spurious signals that are the same frequency as the carrier. Higher S9 values reduce the chance of a carrier being detected. Range: 1-255 Default: 6 (0.6 second) Lost Carrier To Hang Up Delay The time the modem waits before hanging up for carrier loss. Range: 1-255 Default: 14 (1.4 seconds) DTMF Tone Duration The time for DTMF tone dialing and the time between the tone spacing. Range: 50-255 Default: 95 (0.95 second, Country dependent) Escape Prompt Delay (EPD) The minimum "quiet" time between the last three-character escape code and the first character of AT command, which is "a" or "A". Range: 0-255 Default: 50(1 second) |
| S8 | |
| S9 | |
| S10 | |
| S11 | |
| S12 | |

| | |
|-----|--|
| S18 | Test Timer The testing time of the loopback testing. Range: 0-255 Default: 0 (second) Delay To DTR The time the modem ignore DTR before hanging up. Range: 0-255 Default: 5 (0.05 second) Disconnect Inactivity Timer The time allowed for inactivity before the connection is hang up. Range: 0-255 (seconds) Default: 0(disabled) XON Character Sets the value of the XON character. Range: 0-255 Default: 17 XOFF Character Sets the value of the XOFF character. Range: 0-255 Default: 19 Desired Line Connection Speed 0 = Attempt auto mode connection . 3 = Attempt to connect at 300bps . 4 = Attempt to connect at V.22 1200bps . 6 = Attempt to connect at V.22bis 2400bps . 7 = Attempt to connect at V.32bis/V.32 4800bps . 8 = Attempt to connect at V.32bis 7200bps . 9 = Attempt to connect at V.32bis/V.32 9600bps . 10 = Attempt to connect at V.32bis 12000bps . 11 = Attempt to connect at V.32bis 14400bps . 12 = Attempt to connect at V.34 . Default: 0 Delay Before Forced Hang Up The delay time to hang up after the |
| S25 | |
| S30 | |
| S32 | |
| S33 | |
| S37 | |
| S38 | |

S-Register Definitions

S-Register Definitions

| | | | |
|------------------------------------|--|-------|--|
| disconnecting command is received. | | Bit 1 | Append/ARQ to CONNECT XXXX result code in error correction mode (XXXX = rate). |
| Range: | 0-255 | | |
| Default: | 20 (seconds) | Bit 2 | Enable CARRIER XXXX result code (XXXX = rate). |
| Call Failure Reason Code | | Bit 3 | Enable PROTOCOL XXXX result code (XXXX = protocol Identifier). |
| 0 | Normal disconnect, no error occurred. | Bit 4 | Reserved. |
| 4 | Loss of carrier. | Bit 5 | Enable COMPRESSION result code (XXXX = compression type). |
| 5 | V.42 negotiation failed to detect an error-correction modem at the other end. | | |
| 6 | No response to complete negotiation. | | |
| 9 | The modem could not find a common protocol. | | |
| 12 | Normal disconnect initiated by the remote modem. | | |
| 13 | Remote modem does not respond after 10 re-transmissions of the same message. | | |
| 14 | Protocol violation. | | |
| 20 | Hang up by inactivity time out. | | |
| Range: | 0, 4, 5, 9, 12, 13, or 14 | | |
| Default: | 0 | | |
| S91 | PSTN Transmit Level | | |
| | Set the transmit level. | | |
| Range: | 0 to 15 | | |
| Default: | 10 (-10dBm, country dependent) | | |
| S95 | Extended Result Codes | | |
| | The bits in this register can be set to override some of the Wn command options. A bit set to a 1 in this register will enable the corresponding result code regardless of the Wn setting. | | |
| Bit 0 | CONNECT result code indicates DCE speed instead of DTE speed. | | |

Chapter 4 Troubleshooting

If you experience a problem with your fax/modem, refer to this appendix for suggestions on resolving the problem.

Q. Your modem doesn't respond to any AT commands.

- Make sure the modem is on. (externals only)
- Make sure you selected the correct COM port and IRQ in your communications software, and/or in your Windows Control Panel.
- Make sure the computer is in Terminal mode of your communications software.
- Type in all upper (AT) or lower (at) case.
- There may be a COM port/IRQ conflict. Refer back to Internal Installation. You will need to remove your modem from the PC and change your COM port and IRQ setting to COM port 3 and IRQ 5 or 7. If you change your COM port and IRQ setting, also make the changes in your software and in Windows.

Q. You type a command line and receive an ERROR result code.

- You typed an unacceptable command.
- Your command line contains more than 40 characters.

Q. You do not receive a result code after your fax/modem executes a command line.

- All fax/modem result codes may have been disabled with the ATQ1 command. Send the ATQ0 command to enable result codes.

Q. Your fax/modem responds to commands but your computer screen doesn't show the characters you type.

- Make sure the command echo is off (ATE1 is in effect) to have your fax/modem echo commands.
- Make sure your communications program is configured to echo command characters.

Q. Each character you type appears twice on your computer screen.

- Your computer or communications software has its echo feature turned on and the fax/modem's echo feature is also turned on. If the system you are calling echoes your typed characters, turn off local echo at your computer, terminal, or computer software. If the system you are calling doesn't echo type characters, turn off the fax/modem's echo feature by typing ATE0(which appears as AATT EEOO on your screen) and pressing the Enter key.

Q. Your fax/modem does not automatically answer calls.

- Make sure your communications software is set up to automatically answer calls.
- Change the value of Register S0 by typing AT S0 = n and pressing the Enter key, where n is the number of rings that must occur before the fax/modem auto-answer calls.

Q. You can't hear through your fax/modem speaker.

- Use the ATMn command to make sure the speaker is turned on.
- Use the ATLn command to adjust the listening level.

During data transfer...

Q. If your screen display random or garbage characters.

- Set your software to the same word length, parity, and Stop bits as the remote modem.

Troubleshooting

- 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.
- Type the following command to load the template that enable hardware flow control as well as other optimal settings.
AT&F <Enter>
- Disable any Terminal and Stay Resident (TSR) programs running in the background.

Q. If your communications software is reporting many Cyclic Redundancy check (CRC) error and low characters per second (CPS).

- You might have experienced noise on the phone line. Place the call again. The phone company routes calls differently each time you call.
- Type the following command to load the template that enables hardware flow control as well as other optimal settings:
AT&F <enter>
- Lower the serial port rate in your communications software to 38400 bps or 9200 bps.
- Try a different file transfer protocol (do not use Xmodem if other protocols are available).
- Disable any Terminate and Stay Resident (TSR) programs running in the background, such as screen savers.

Q. If the modem disconnect while on-line.

- Check for loose connections between the standalone modem and the computer.
- Check for loose connections between the modem and the telephone connection.
- Line noise or interference may be interfering with modem signals. Retry the connection by dialing the number again.