GETTING STARTED MANUAL

If you will use this modem with a personal computer and a popular off-the-shelf communications software, for a simple modem application such as going on-line with bulletin boards, up-loading or downloading files, and sending fax messages, you may now go to the Getting Started Manual to exercise hardware connection for your modem. Then, you should refer to your software's manual to get on the road. This manual will serve as your guide for modem commands.

If you would like to know the modem operations and commands in more depth, the Electronic Manual of Fax-modem diskette is included to serve this purpose.

The LED Indicators on the Front Panel

The indicators on the modem's front panel denote the current modem operation characteristics and status. They are:

MR **M**odem **R**eady. Lights up when the modem is turned on.
TR **T**erminal **R**eady. Flashes when DTR signal is detected.
CD **C**arrier **D**etected. Lights up when a carrier from the remote modem is detected.
SD **S**end **D**ata. Flashes when the modem is sending data to the remote modem or when receiving data from the local computer.
RD **R**eceive **D**ata. Flashes when the modem is receiving data from the remote modem or when sending data to the local computer.
AA **A**uto-**A**nswer. Lights up when the modem is set for auto-answer. Flashes when an incoming ring is detected.
OH **O**ff-**H**ook. Lights up when the modem is using the telephone line. Off when the modem hangs-up (on-hook).
HS **H**igh **S**peed. Lights up when modem speed exceeds 4800 bps.

When you turn on your modem, at least the MR indicator shall light up. There may be some other indictors lights depended on the settlement of the modem. Otherwise, you should check the power connected to your modem.

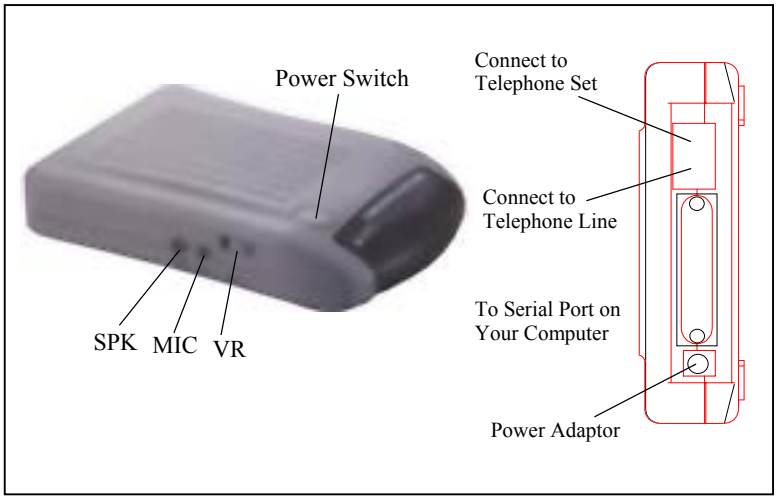
The Rear Panel and the Connectors

PHONE : Accepts a telephone set connected parallel to your modem.

LINE : Accepts the RJ-11 cable that links your modem to a telephone line or to a 2-wire leased-line.

RS-232 : Accepts the serial cable that is connected between your modem and your computer.

12VAC : Accepts the power adaptor that comes with your modem.



The Serial Port and the RS-232 Cable

To use this modem, it will require an RS-232 serial port on your computer. If your do not have it, you need to have one.

It is better to select a serial port card that uses a high-speed 16550 UART chip. A card with an ordinary UART chip handles transmissions at a maximum speed around 38,400bps. In case the data compression of

your modem is active, it may perform at an exceeding speed and an ordinary serial port card may sometimes cause data loss.

You will also require an RS-232 cable to connect your modem with computer. You will be Asked to buy a modem cable if you are a PC user. The modem cable shall, at one end, have a DB25M (male) connector that fits the female connector on the modem, and at the other end a serial port connector that matches your computer.

Hardware Connection

1) Make sure that both the modem and computer are turned off.
2) Use an RS-232 cable to connect the modem to a serial port on your computer. Secure the connector screw on it.

☞ Verify the serial port number in which your modem is connected. You must Write down the port number as you will need to specify this number during software installation. As a general rule on PC applications, the port COM1 is connected to a mouse, while COM2 is for a modem.

3) Use an RJ-11 cable to connect the LINE jack to the wall outlet of the telephone line.
4) Connect a telephone set to the PHONE jack. You may leave this jack disconnected if desired.
5) Make sure that the power adaptor that comes with your modem is of a correct voltage that complies with your power source. Use the adaptor to connect the power source to the 12VAC jack on the modem.

Test the Power Connection

You can turn on your modem by pushing the power switch button and watch the front panel indicators. Depending on the setting of your modem, the MR and other indicators should light up. If none is lit, check the power connection for the modem.

Test the Telephone Line Connection

Once a telephone set is connected, you may test the line quality and connections by lifting the telephone handset, listening for a clear dial tone, and making several telephone calls. The calls shoud go through well and the sound loud and clear. Otherwise, the line may be poor or have a faulty connection.

Data Communications Software Packages

Your modem follows the industrial standard in the modem command set. As a result, most of the popular communications software packages off-the-shelf will work with it. You should select a software package according to your application requirement.

Most popular communications software are provided with the configuration named Initial-String or Dialing-Prefix. It is wise to check, one by one, the commands in this string as they will be sent to determine the modem characteristics each time prior to dialing.

Fax Communications Software Packages

Similar to data communication applications, you interact with the modem through the fax communications software.

Your modem only supports Class 1 command set.

Error-Correction and Data Compression

Your modem supports the industrial standards of MNP 5 and ITU-T (formerly called CCITT) V.42bis for error-correction and data compression (ECDC). Both standards are capable of error-correction as well. The modem will re-transmit a faulty data block when an error is detected while receiving.

The ITU-T V.42bis can perform data compression at a rate up to four times, depending on the format of data. That is, the throughput can be reach as high as 57,600 bits per second when you are on-line at 14,400 bps.

The MNP 5 was popular before V.42bis was born. It can reach a compression rate of two times, that is around half of what V.42bis can do.

To enjoy the effectiveness of ECDC, both modems on-line should exercise the same ECDC standard. You should always set your modem to V.42bis auto-reliable mode by command \N3, which will automatically negotiate with the remote modem for an available ECDC standard.

Controlling the Modem Speaker

In the factory, your modem speaker is preset in to medium volume and turned on when the carrier from the remote modem is detected. You may issue the commands L and M, with an appropriate parameter following it, to control the volume, or turn on the speaker.

The Modem Commands

Prefix, Repeat and Escape Commands

AT Attention. Precede all command lines except A/ and +++
A/ Re-execute the last command in command buffer
+++ Escape characters, requires guard time before and after

Dial Commands and Dial Modifiers

D Originate a call
S=n Dial the n^{th} stored number
T Touch tone dialing
P Pulse dialing
R Dial in answer mode
W Wait for second dial tone
L Re-Dial the last valid telephone number
, Pause
! Flash
; Return to command state

Operation Commands

A Answer incoming call

B0 CCITT or ITU-T compatibility
B1 Bell protocol only

E0 Disable command echo
E1 **Enable echo command characters**

H0 Hang up the connection (on-hook)
H1 Go off-hook to make a call

I0 Reports product code
I1 Calculates the ROM checksum
I3 Reports firmware version

L0 Low volume
L1 Low volume
L2 **Medium volume**
L3 High volume

M0 Speaker off at all times
M1 **Speaker on until CD detected**
M2 Speaker always on

N0 Fixed data rate follow *N command
N1 **Enable adaptive data rate**

O0 **Return to data-link without retrain**
O1 Return to data-link with retrain

Q0 **Modem sends response codes**
Q1 Do not send response codes

Sr? Display the value in register r
Sr=n Set register r to a value n

V0 Display response codes in digit form
V1 **Display response codes in words**

W0 Disable V.42 response codes, display DTE speed
W1 **Enable V.42 response codes,**

	display DCE speed
W2	Disable V.42 response codes, display DCE speed
X0	Enable basic response codes 0-4
X1	Do not detect dial tone and busy signal
X2	Include dial tone detection response
X3	Include busy detection response
X4	**Enable all response codes**
Y0	**Do Not send (and ignore) break signal**
Y1	Send break signal for 4 seconds before disconnect
Z0	Reset modem with SCP0
Z1	Reset modem with SCP1
&C0	Turn CD signal to always on
&C1	**CD on at remote carrier detected**
&D0	Alone with any of following &Q0, &Q5, &Q6 then, DTR is not functional. Alone with any of following &Q1, &Q4 then DTR drop causes the modem hang up, Auto-answer is not affected. Alone with any of following &Q2**, &Q3** DTR drop causes the modem to hang up, Auto-Answer is inhibited
&D1	Alone with any of following &Q0, &Q1, &Q4, &Q5, &Q6 DTR drop is interpreted by the modem as if the asynchronous escape sequence had been entered. the modem return to asynchronous command state without disconnecting. Alone with any of following &Q2, &Q3 DTR drop causes the modem to hang up. Auto-Answer is inhibited.
&D2	**Alone with any of following &Q0 through %Q6 then, DTR drop causes the modem to hang up Auto-Answer is inhang.**
&D3	Alone with any of following &Q0, &Q1, &Q4, &Q5, &Q6 DTR drop causes the modem to perform a softreset as if the z command were received. The & Y setting determines which profile is loaded. Alone with any of following &Q2, &Q3 DTR drop causes the modem to hang up Auto-Answer is inhibited.
&F0	Restore factory default profile FDP0 (as ECDC modem)
&F1	Restore factory default profile FDP1 (as non-ECDC modem)
&G0	**Disable guard tone**
&G1	Disable guard tone (default for us models)
&G2	Enable 1800 Hz guard tone
&Ln	Leased line dail line operation
&L0	Dial-Up line operation
&G2	Leased line operation
&K0	Disable flow control

&K3 RTS/CTS flow control
&K4 XON/OFF flow control
&K5 Unidirectional XON/OFF
&K6 RTS/CTS, XON/XOFF flow control

&M0 **Set modem for async operation**
&M1 Enter sync mode after async dialing
&M2 Sync terminal support. Modem dials a stored number and enters sync mode when DTR off-to-on
&M3 Dial manually while DTR off, handshake proceeds when DTR off-to-on

&P0 **M/B ratio 39/61(USA)**
&P1 M/B ratio 33/67(UK, Hong Kong)
&P2 M/B ratio 39/61 at 20 pulses
&P3 M/B ratio 33/67 at 20 pulses

&Q0 See & M0
&Q1 See & M1
&Q2 See & M2
&Q3 See & M3
&Q4 Selects Auto Sync operation. When used in conjunction with the Hayes synchronous interface (HCI)capability in the DTE. Provides synchronous communication capability from an asynchronous terminal
&Q5 The modem will try to negotiate an error-corrected link
&Q6 Select asynchronous operation in normal mode

&R0 Modem turns CTS on when detects RTS from the local computer
&R1 Ignore RTS. Modem turns CTS on when ready to receive synchronously

&S0 **Modem forces DSR always on**
&S1 Set DSR to follow RS-232 spec

&T0 Terminates test in progress
&T1 Initiates local analog loopback, V.34 Loop3, Sets S16 bit0. If aconnect exists when this command is issued, the modem hangsup, The connect xxxx message is displayed upon the start of the test.
&T5 **Disable digital loopback acknowledgment for remote request.**
&T8 Initiates local analog loopback, V.34 Loop3, with selftest.

&V Display modem profiles and numbers

&W0 Write ACP to SCP0
&W1 Write ACP to SCP1

&X0 Select internal clock
&X1 Select external clock
&X2 Select slave clock

&Y0 Designate SCP0 as the active SCP
&Y1 Designate SCP1 as the active SCP

&Zn= Save up to three numbers to NVRAM. Use DS=n to dial the stored number

Note: &Q,&M: for Sync mode only

V.42bis and MNP Commands

\A0	MNP block size 64 characters
\A1	MNP block size 128 characters
\A2	MNP block size 192 characters
\A3	**MNP block size 256 characters**
\Bn	Send n/10 seconds of line break to the modem (n = 0 ~ 9, default 3)
\K0	Enter command mode, do not send a break signal to remote (To send a break after use the \B command)
\K1	Clear data buffer and send a break
\K2	Same as \K0
\K3	Immediately send a break
\K4	Same as \K0
\K5	**Send a break in sequence with any data received from the port**
\N0	Set modem to normal mode
\N1	Set modem to direct mode
\N2	Set modem to MNP reliable mode
\N3	Set to MNP/V.42 auto-reliable mode
\N4	V.42 reliable with phase detection
\V0	Connect messages are controlled by the command settings X, W, and S95.
\V1	Connect message displayed in the single line format described below subject to the command settings V (Verbose) and Q(Quiet). In Non-Verbose mode(V0), single line connect messages are disabled and a single numeric result code is generated for CONNECT DTE.
%C0	Disable data compression
%C1	**Enable MNP5 data compression negotiation**
%C2	Enable V.42bis data compression
%C3	Enable both V.42bis and MNP5 data compression (default)
%E0	Disable auto-retrain
%E1	Enable auto-retrain
%E2	Enable fallback/fall forward

Voice Commands for Rockwell Chip Set _____

The Voice Command

Command	Function
A	Answering in Voice/Audio Mode
D	Dial command in Voice/Audio Mode
H	Hang up in Voice/Audio Mode
Z	Reset from Voice/Audio Mode
#BDR=n	Select baud rate (turn off autobaud) 0<n<48
#CID=n	Enable Caller ID detection and select reporting format n=0~2
#CLS=n	Select data, fax, or Voice/Audio n=0,1,2,8
#MDL?	Identify model
#MFR?	Identify manufacturer
#REV?	Identify revision level
#TL	Audio output transmit level
#VBQ?	Query buffer size
#VBS=n	Bits per sample (ADPCM or PCM) n=2,4,8
#VBT=n	Beep tone timer n =0~40 (0-4 seconds)
#VCI?	Identify compression method (ADPCM)
#VLS=n	Voice line select (ADPCM or PCM) n=@~9
#VRA	Ringback goes away timer (originate)
#VRN	Ringback never came timer (originate)
#VRX	Voice Receive Mode (ADPCM or PCM)
#VSD	Enable silence deletion (voice receive, ADPCM)
#VSK=n	Buffer skid setting n=255
#VSP	Silence detection period (voice receive, ADPCM)
#VSR	Sampling rate selection (ADPCM or PCM)
#VSS	Silence detection tuner (voice receive, ADPCM)
#VTD	DTMF tone reporting capability
#VTM	Enable timing mark placement
#VTS	Generate tone signals
#VTX	Voice transmit mode (ADPCM or PCM)

Fax Class I Commands

Command	Function
Service Class ID	
+FCLASS=	Service Class
Fax Class 1 Commands	
+FAE=n	Data/Fax auto Answer
+FTS=n	Stop Transmission and Wait
+FRS=n	Receive Silence
+FTM=n	Transmit Data
+FRM=n	Receive Data
+FTH=n	Transmit Data with HDLC Framing
+FRH=n	Receive Data with HDLC Framing

Fax Class II Commands

Command	Function
+FCLASS=n	Service class
+FAA=n	Adaptive answer
+FAXERR	Fax error value
+FBOR	Phase C data bit order
+FBUF?	Buffer size (read only)
+FCFR	Indicate confirmation to receive
+FCLASS=	Service class
+FCON	Facsimile connection response
+FCIG	Set the polled station identification
+FCIG:	Report the polled station idendification
+FCR	Capability to receive
+FCR=	Capability to receive
+FCSI:	Report the called station ID
+FDCC=	DCE capabilities parameters
+FDCS:	Report current session
+FDCS=	Current session results
+FDIS:	Report remote capabilities
+FDIS=	Current sessions parameters
+FDR	Begin or continue phase C receive data
+FDT=	Data transmission
+FDTC:	Report the polled station capabilities
+FET:	Post page message response
+FET=N	Transmit page punctuation
+FHNG	Call termination with status
+FK	Session termination
+FLID=	Local ID string
+FLPL	Document for polling
+FMDL?	Identify model
+FMFR?	Identify manufacturer
+FPHCTO	Phase C time out
+FPOLL	Indicates polling request
+FPTS:	Page transfer status
+FPTS=	Page
+FREV?	Identify revision
+FSPL	Enable polling
+FTSI:	Report the transmit station ID

S-Register Summary

Register	Range	Units	Default	Function
S0	0-255	Rings	0	Rings to Auto-Answer
S1	0-255	Rings	0	Rings Counter
S2	0-255	ASCII	43	Escape character
S3	0-127	ASCII	13	Carriage return character
S4	0-127	ASCII	10	Line Feed Character
S5	0-255	ASCII	8	Backspace character
S6	2-255	s	2	Wait Time for Dial Tone
S7	1-255	s	50	Wait Time for Carrier
S8	0-255	s	2	Pause Time for Dial Delay Modifier
S9	1-255	0.1s	6	Carrier Detect Response Time
S10	1-255	0.1s	14	Carrier Loss Disconnect Time
S11	50-255	0.001s	95	DTMF Tone Duration
S12	0-255	0.02s	50	Escape Prompt Delay
S13	-	-	-	Reserved
S14	-	-	138(8Ah)	General Bit Mapped Options Status
S15	-	-	-	Reserved
S16	-	-	0	Test Mode Bit Mapped Options Status(&T)
S17	-	-	-	Reserved
S18	0.255	s	0	Test Timer
S19	-	-	0	AutoSync Options
S20	0-255	-	0	AutoSync HDLC Address or BSC Sync Character
S21	-	-	52(34h)	V.24/General Bit Mapped Options Status
S22	-	-	117(75h)	Speaker/Results bit Mapped Options Status
S23	-	-	62(3Dh)	General Bit Mapped Options Status
S24	0-255	s	0	Sleep Inactivity Timer
S25	0-255	s or 0.01s	5	Delay to DTR Off
S26	0-255	0.01s	1	RTS-to-CTS Delay
S27	-	-	73(49h)	General Bit Mapped Options Status
S28	-	-	0	General Bit Mapped Options Status
S29	0-255	10ms	70	Flash Dial Modifier Time
S30	0-255	10s	0	Disconnect Inactivity Timer

Register	Range	Units	Default	Function
S31	-	-	194(C2h)	General Bit Mapped Options Status
S32	0-255	ASCII	17(11h)	XON Character
S33	0-255	ASCII	19(13h)	XOFF Character
S34-S35	-	-	-	Reserved
S36	-	-	7	LAPM Failure Control
S37	-	-	0	Line Connection Speed
S38	0-255	s	20	Delay Before Forced Hang-up
S39	-	-	3	Flow Control Bit Mapped Options Status
S40	-	-	104(68h)	General Bit Mapped Options Status
S41	-	-	195(C3h)	General Bit Mapped Options Status
S42-S45	-	-	-	Reserved
S46	-	-	138	Data Compression Control
S48	-	-	7	V.42 Negotiation Control
S82	-	-	128(40h)	LAPM Break Control
S86	0-255	-	-	Call Failure Reason Code
S91	0-15	dBm	10(country dependent)	PSTN Transmit Attenuation Level
S92	0-15	dBm	10(country dependent)	Fax Transmit Attenuation Level
S95	-	-	0	Result Code Messages Control

♦ Register value may be stored in one of two user profiles with the &W command.

Result Codes

Short Form	Long Form	n Value in ATXn Command					Notes
		0	1	2	3	4	
0	OK	x	x	x	x	x	Note 2
1	Connect	x	x	x	x	x	
2	Ring	x	x	x	x	x	
3	No Carrier	x	x	x	x	x	
4	Error	x	x	x	x	x	
5	Connect 1200	1	x	x	x	x	
6	No dial tone	3	3	x	x	x	
7	Busy	3	3	3	x	x	
8	No Answer	x	x	x	x	x	
9	Connect 600	1	x	x	x	x	
10	Connect 2400	1	x	x	x	x	
11	Connect 4800	1	x	x	x	x	
12	Connect 9600	1	x	x	x	x	
13	Connect 7200	1	x	x	x	x	
14	Connect 12000	1	x	x	x	x	
15	Connect 14400	1	x	x	x	x	
16	Connect 19200	1	x	x	x	x	
17	Connect 38400	1	x	x	x	x	
18	Connect 57600	1	x	x	x	x	
19	Connect 115200	1	x	x	x	x	
20	Connect 230400	x	x	x	x	x	Note 2
22	Connect 75TX/1200RX	1	x	x	x	x	
23	Connect 1200TX/75RX	1	x	x	x	x	
24	Delayed	4	4	4	4	x	
32	Blacklisted	4	4	4	4	x	
33	Fax	x	x	x	x	x	
35	Data	x	x	x	x	x	
40	Carrier 300	x	x	x	x	x	
44	Carrier 1200/75	x	x	x	x	x	
45	Carrier 75/1200	x	x	x	x	x	
46	Carrier 1200	x	x	x	x	x	
47	Carrier 2400	x	x	x	x	x	
48	Carrier 4800	x	x	x	x	x	
49	Carrier 7200	x	x	x	x	x	
50	Carrier 9600	x	x	x	x	x	
51	Carrier 12000	x	x	x	x	x	
52	Carrier 14400	x	x	x	x	x	

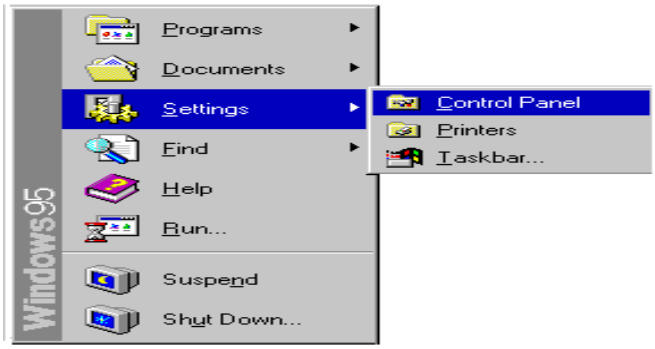
Short Form	Long Form	n Value in ATXn Command					Notes
		0	1	2	3	4	
53	Carrier 16800	x	x	x	x	x	
54	Carrier 19200	x	x	x	x	x	
55	Carrier 21600	x	x	x	x	x	
56	Carrier 24000	x	x	x	x	x	
57	Carrier 26400	x	x	x	x	x	
58	Carrier 28800	x	x	x	x	x	
59	Connect 16800	1	x	x	x	x	
61	Connect 21600	1	x	x	x	x	
62	Connect 24000	1	x	x	x	x	
63	Connect 26400	1	x	x	x	x	
64	Connect 28800	1	x	x	x	x	
66	Compression: Class 5	x	x	x	x	x	
67	Compression: V.42bis	x	x	x	x	x	
69	Compression: None	x	x	x	x	x	
70	Protocol: None	x	x	x	x	x	
77	Protocol: LAPM	x	x	x	x	x	
78	Carrier 31200	x	x	x	x	x	
79	Carrier 33600	x	x	x	x	x	
80	Protocol: ALT	x	x	x	x	x	
81	Protocol: ALT-Cellular	x	x	x	x	x	
84	Connect 33600	1	x	x	x	x	
91	Connect 31200	1	x	x	x	x	
150	Carrier 32000	x	x	x	x	x	Note 2
151	Carrier 34000	x	x	x	x	x	Note 2
152	Carrier 36000	x	x	x	x	x	Note 2
153	Carrier 38000	x	x	x	x	x	Note 2
154	Carrier 40000	x	x	x	x	x	Note 2
155	Carrier 42000	x	x	x	x	x	Note 2
156	Carrier 44000	x	x	x	x	x	Note 2
157	Carrier 46000	x	x	x	x	x	Note 2
158	Carrier 48000	x	x	x	x	x	Note 2
159	Carrier 50000	x	x	x	x	x	Note 2
160	Carrier 52000	x	x	x	x	x	Note 2
161	Carrier 52000	x	x	x	x	x	Note 2
162	Carrier 56000	x	x	x	x	x	Note 2
165	Connect 32000	x	x	x	x	x	Note 2
166	Connect 34000	x	x	x	x	x	Note 2
167	Connect 36000	x	x	x	x	x	Note 2
168	Connect 38000	x	x	x	x	x	Note 2
169	Connect 40000	x	x	x	x	x	Note 2
170	Connect 42000	x	x	x	x	x	Note 2

Short Form	Long Form	n Value in ATXn Command					Notes
		0	1	2	3	4	
171	Connect 44000	x	x	x	x	x	Note 2
172	Connect 46000	x	x	x	x	x	Note 2
173	Connect 48000	x	x	x	x	x	Note 2
174	Connect 50000	x	x	x	x	x	Note 2
175	Connect 52000	x	x	x	x	x	Note 2
176	Connect 54000	x	x	x	x	x	Note 2
177	Connect 56000	x	x	x	x	x	Note 2
+F4	+FCERROR	x	x	x	x	x	

Notes:
An “x” in a column indicates that the message (either the long form if verbose, or the value only for short form) will be generated when that particular value of “n” (shown at the top of the column) has been selected by the use of ATXn. If the (verbose or short form) will be output for that X option.

_ Installation of Modem Driver in Windows 95/98 ____

(1) Turn on computer. Move mouse to “Start” at left hand side, enter “Setting-s” and select “Control panel”.

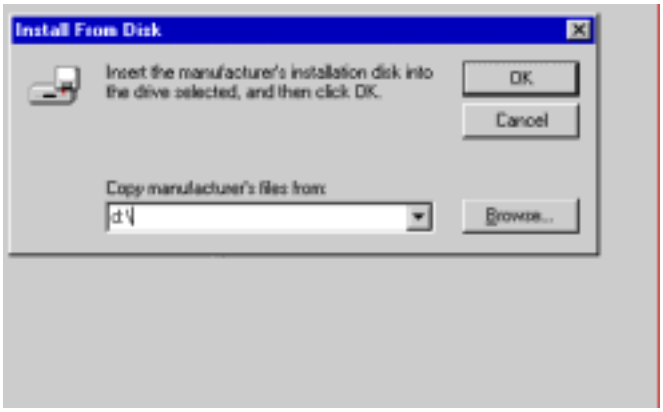


(2) Under “Control Panel” select “Modems”. (or Move mouse to “My compu-ter” at right hand side, enter “Control panel and Modems”.)

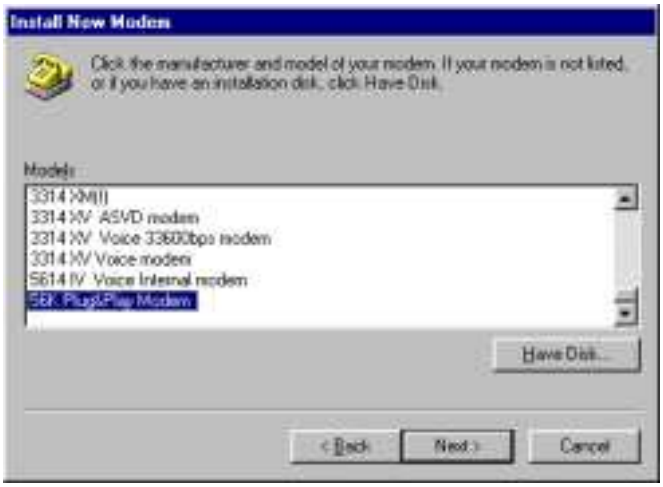
(3) In Install New Modem, please tick “Don‘t detect my modem; I will select it from a lost”, and then go to next step.

(4) Because the modem is not listed, you click “Have Disk” for other modem models.

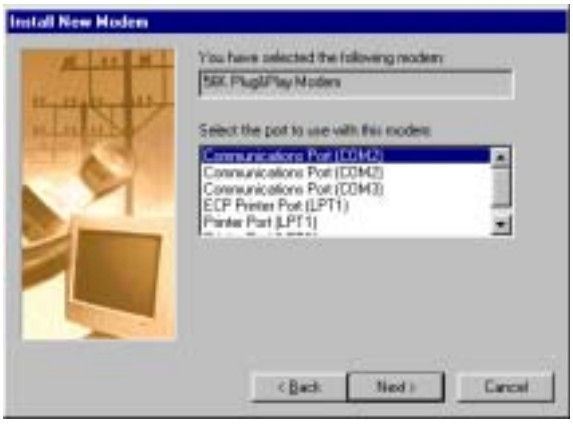
(5) Insert the installation disk into the driver selected, click “Browse”, select one of the inf files (Dtxmodem.inf for discovery products; Logmodem.inf for DataSystem products), and then click “OK”.



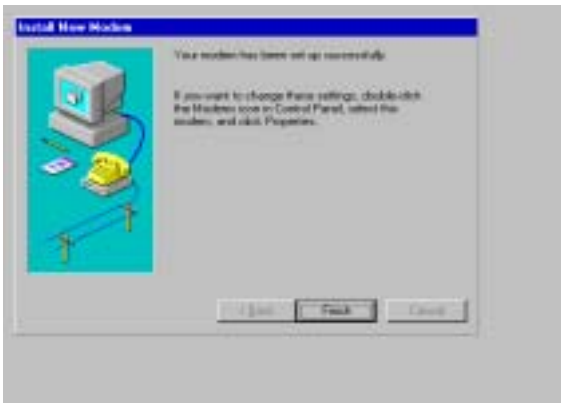
(6) Click the manufacturer and model of your modem, and then go to next step.



(7) Select the port to use with this modem, for example COM2, and then click "Next".



(8) Your modem has been set up successfully. Click "Finish".



(9) Select the modem you have, and then click “OK”.