

V.3600 Manual

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Chapter 5

AT Commands

This chapter describes commands used to select options and operate the modem. Some options depend on, or are restricted by, the mode of operation. Appendix E provides a quick reference list.

Command Categories

The modem offers these major categories of command statements:

- Response (page 5-5)
- Dial (page 5-13)
- Answer (page 5-17)
- Terminal Interface (page 5-19)
- General (page 5-22)
- Private Line (page 5-33)
- Configuration (page 5-37)
- Remote Configuration (page 5-41)

Other AT command groups are discussed in these chapters:

- Protocol (Chapter 6)
- Test (Chapter 7)
- Security (Chapter 8)
- Fax (Chapter 9)
- S-registers (Chapter 10)

Operation Modes

In asynchronous operation, the modem functions in one of these modes:

- Offline Command Mode
- Online Command Mode
- Data Mode

Offline Command Mode

In offline command mode (generally referred to as command mode), the modem communicates with the computer or terminal. Commands can be entered separately or in strings. There is no data communication link established in this mode.

Online Command Mode

This mode is entered from the data mode after the escape command has been entered. The escape command is performed by entering the escape character (+ is the default) three times. The data communication link remains established but data transmission is suspended. The modem then accepts commands as it does in offline command mode.

Data Mode

The modem goes to data mode (online) after it acknowledges the proper signal and successfully connects with a compatible modem. In data mode, the modem sends and receives data, but does not accept or execute command instructions.

Example: The modem is in the command state. The D command and phone number are used to dial a remote modem. The local modem waits to receive an answer back tone from the remote modem. When the local modem receives the carrier, it leaves the command state and goes online in the data mode. At this time, both modems are using the telephone line and a communication link is established.

Sending Commands to the Modem

When the computer, modem, and monitor are on, an instruction can be sent to the modem telling it what function or activity to perform. The instruction, called a command statement, command string, or command, is typed using the computer/terminal keyboard. The command statement temporarily resides in a section of memory called the command buffer.

Each command statement is made up of characters, numbers, and keyboard symbols such as the & and % signs. Commands must be written in a specific form so the modem recognizes and follows the instruction.

Creating a Command Statement — AT

To create a command statement use the following steps:

- 1) Type AT. This is the Attention Code telling the unit a command statement follows.
- 2) Type the command.
- 3) Press the Enter key to send the command statement to the modem.

An example of a command statement using the dial command (D) follows.

```
ATD554-1212
```

This statement can be read as "Attention: Dial 554-1212."

Another AT command statement example is:

```
ATZ
```

This statement can be read as "Attention: execute the Z command."

After entering a command line the modem returns a response message indicating whether or not the command was accepted or giving the data requested by the command line.

To clear command statements from the buffer you can:

- Turn the modem off,
- Enter AT, or
- Use the DTR reset feature ("Data Terminal Ready — &D" section on page 5-20).

Autobaud

The attention code (AT) is analyzed by the modem to determine the transmission speed, parity, and bits per character used by the DTE. This autobaud process is repeated each time the AT command prefix is sent.

Guidelines for Creating Command Statements

The attention code (AT) may be upper or lower case but not a combination like aT.

- Press the Enter key to execute a command.
- The command buffer can hold 80 characters.
- Use the backspace or delete key to erase the last character.

Even though the initial AT code must be all upper or lower case, characters that follow can be any mix of upper and lower case.

Monitor Display

As commands are typed they appear on the monitor so the operator can verify the input. This is called local character echo. The echo may be turned on or off using AT commands. Refer to the "Local Character Echo — E" section on page 5-22 for details.

Command Statement Buffer

The modem temporarily stores up to 80 characters in the command buffer. If this limit is exceeded, the modem does not accept the command and sends an ERROR message. To correct this condition, retype the command using 80 characters or less.

The AT characters and punctuation used in telephone numbers do not take up space in the buffer. Blank characters used as spaces to help increase readability are not counted. For example, the modem reads the commands:

```
ATD (212) 554-1212
ATD2125551212
ATD 212 555 1212
```

as having 11 characters each. Commands can be typed in any of these forms.

Backspace Key

Use the backspace key to change the command statement or correct errors. The backspace key allows the cursor to be moved back to the character(s) in error. The command can then be retyped from that point.

Example: ATD5551211 has been typed. To change the last 1 to 2, press the backspace key once, type 2, and press Enter to execute the command.

Repeating a Command — A/

This command tells the computer to repeat the last command stored in its buffer. It automatically reexecutes the command without retyping. The return key does not need to be pressed.

Example: The ATD5551212 command has been executed, and the phone is busy. To repeat the instruction type A/. Do not use AT before this command: AT empties the buffer.

Numbered Commands

Commands that start with the same letter are distinguished by a number following the letter.

For example, the M0 command selects speaker always off, M1 speaker on until carrier detected, and M2 selects speaker always on.



Note

The zero (0) may be omitted; the commands M and M0 are identical. This manual uses the nonzero form. The modem treats both the same, but zeros count against the buffer total.

Group Commands

A group of commands can be typed in a single command statement. Pressing the Enter key sends the entire command string to the modem, which executes each command individually in the order it appears in the command statement reading from left to right.

For example, the command statement ATQ0V0L3DT5551212 means

- AT Attention.
- Q Allow response messages to be sent.
- V Select digit code responses.
- L3 Select high volume.
- DT Tone dial 555-1212.

The modem executes the AT command followed by the Q, V, L, D, and T commands. ATQ0V0L3DT5551212 can be read as ATQVL3DT5551212. Eliminating zeros reduces the number of characters, allowing more room in the buffer.

The dial D command initiates the dial process so no other commands, only dial modifiers, can follow it.



Note

Bold text indicates command parameter defaults.

Response Commands

The modem communicates with the operator through response messages. These appear on the monitor or a computer printout to show the result of the command or action executed. Response messages can appear as words or numbers.

Digit / Word Selection — V

The V command tells the modem which type of response message to show on the monitor. Some software requires digit response messages but words are easier to remember.

Command	Operation
V	Enables digit response messages
V1	Enables word response messages

Response Displays — Q

The Q command enables or disables response messages. The modem still responds to commands when the response display is inhibited.

Command	Operation
Q	Response display on
Q1	Response display off
Q2	Response display on in originate mode only

Negotiation Displays — W

The W command enables or disables negotiation response messages.

These messages are verbose negotiation status displays to alert the user to the link rate, protocol, and DTE rate.

Command	Operation
W	Disables negotiation displays
W1	Enables negotiation displays
W2	Displays DCE link rate only

Connect Message Codes — IV

The V.3600 AT\V command provides the following connect message options.

Command	Operation
AT\V	CONNECT DTE rate
AT\V1	CONNECT DTE rate/protocol
AT\V2	CONNECT DCE rate
AT\V3	CONNECT DCE rate/protocol
AT\V4	CONNECT DCE fx rate/DCE fx rate/modulation mode/protocol

Call Progress / Connect Speed Messages X

The X command selects response code/message displays and dialing options such as call progress monitoring, busy signal or dial tone detection and blind dialing.

Command	Operation
X	Dial tone and busy signal detection not selected; CONNECT (code 1) response messages displayed for all speeds
X1	Dial tone and busy signal detection not selected; appropriate CONNECT response messages or codes displayed for data rate
X2	Dial tone detection only; NO DIAL TONE message or code appears if dial tone not detected within 5 seconds
X3	Busy signal detection only; BUSY message or code appears if dialed number is busy
X4	Dial tone and busy signal detection; appropriate CONNECT message or code displayed

The X command followed by a dial command makes the modem go off hook, wait the amount of time set in register S6, and dial the number. If connection is made, the modem returns a CONNECT (code 1) message to the screen regardless of the connection rate. With a basic response, the modem does not detect a busy or no dial tone condition.

The X1 command followed by a dial command makes the modem go off hook, wait the amount of time set in register S6, and dial the number. If connection is made the modem returns an appropriate CONNECT message or code to the screen. The modem does not detect a busy or no dial tone situation.

The X2 command followed by a dial command makes the modem go off hook and wait for a dial tone before dialing. If a dial tone is not detected within 5 seconds, the modem sends a NO DIALTONE message and hangs up. The modem does not detect a busy situation in this mode.

The X3 command followed by a dial command makes the modem go off hook, wait the amount of time set in register S6 and dial the number. If a busy signal is detected, the modem sends a BUSY message and hangs up. If the call is completed, the appropriate CONNECT message similar to X1 is displayed. The modem does not detect a no dial tone situation.

The X4 command, followed by a dial command makes the modem go off hook and wait for a dial tone before dialing. If a dial tone is not detected within 5 seconds, the modem returns a NO DIALTONE message and hangs up. If a busy signal is detected, the modem returns a BUSY message and hangs up. If the call is completed, the appropriate CONNECT message similar to X1 is displayed.

The X4 command combines the features of X1, X2, and X3. The factory setting is X4.



Note

When an X2, X3, or X4 command is in effect, an appropriate CONNECT data rate message or code is displayed as for X1.

When a blind dial command (X, X1, X3) is in effect, the modem waits 2 seconds or the time set in S6 and then dials.

Number Code Application — *RC

Some communications software packages use different number codes to indicate the data rate of the serial port. This option selects either of two commonly used number code sets.

Command	Code Set	Number	Operation
*RC	Standard	15	4800 bps
		18	9600 bps
*RC1	Alternate	11	4800 bps
		12	9600 bps



Note

Asterisks in AT commands are part of the command and do not indicate footnotes.

Response Number Codes / Messages

Response number codes, messages, and their meanings are as follows. The connect rates are serial port rates (DTE), not DCE rates.

Code	Message	Meaning
0	OK	Command received
1	CONNECT	Connect at 300 bps while X1, X2, X3, or X4 command in effect; all rates while X command in effect
2	RING	Ring detected
3	NO CARRIER	Valid carrier not detected within period specified by register S7, or carrier lost for value of S10 or more
4	ERROR	Command not recognized or too long
5	CONNECT 1200	Connection made at 1200 bps
6	NO DIAL TONE	No dial tone detected for 5 seconds (X2 or X4 command in effect)
7	BUSY	Dialed number busy (X3 or X4 command in effect)
10	CONNECT 2400	DTE rate 2400 bps
11, 15	CONNECT 4800	DTE rate 4800 bps
12, 18	CONNECT 9600	DTE rate 9600 bps
20	CONNECT 300	DTE rate 300 bps
22	CONNECT 7200	DTE rate 7200 bps
23	CONNECT 12000	DTE rate 12000 bps
24	CONNECT 14400	DTE rate 14400 bps
25	CONNECT 16800	DTE rate 16800 bps
26	CONNECT 19200	DTE rate 19200 bps
27	CONNECT 21600	DTE rate 21600 bps
28	CONNECT 24000	DTE rate 24000 bps
29	CONNECT 26400	DTE rate 26400 bps
30	CONNECT 28800	DTE rate 28800 bps

Code	Message	Meaning
31	CONNECT 31200	DTE rate 31200 bps
32	CONNECT 32000	DTE rate 32000 bps
33	CONNECT 33600	DTE rate 33600 bps
34	CONNECT 38400	DTE rate 38400 bps
35	CONNECT 57600	DTE rate 57600 bps
36	CONNECT 115200	DTE rate 115200 bps
37	CONNECT 230400	DTE rate 230400 bps
38	CONNECT 300/V42bis	V.42 bis 300 bps connection
39	CONNECT 600/V42bis	V.42 bis 600 bps connection
40	CONNECT 1200/V42bis	V.42 bis 1200 bps connection
41	CONNECT 2400/V42bis	V.42 bis 2400 bps connection
42	CONNECT 4800/V42bis	V.42 bis 4800 bps connection
43	CONNECT 7200/V42bis	V.42 bis 7200 bps connection
44	CONNECT 9600/V42bis	V.42 bis 9600 bps connection
45	CONNECT 12000/V42bis	V.42 bis 12000 bps connection
46	CONNECT 14400/V42bis	V.42 bis 14400 bps connection
47	CONNECT 16800/V42bis	V.42 bis 16800 bps connection
48	CONNECT 19200/V42bis	V.42 bis 19200 bps connection
49	CONNECT 21600/V42bis	V.42 bis 21600 bps connection
50	CONNECT 24000/V42bis	V.42 bis 24000 bps connection
51	CONNECT 26400/V42bis	V.42 bis 26400 bps connection
52	CONNECT 28800/V42bis	V.42 bis 28800 bps connection
53	CONNECT 31200/V42bis	V.42 bis 31200 bps connection

Code	Message	Meaning
54	CONNECT 32000/V42bis	V.42 bis 32000 bps connection
55	CONNECT 33600/V42bis	V.42 bis 33600 bps connection
56	CONNECT 38400/V42bis	V.42 bis 38400 bps connection
57	CONNECT 57600/V42bis	V.42 bis 57600 bps connection
58	CONNECT 115200/V42bis	V.42 bis 115200 bps connection
59	CONNECT 230400/V42bis	V.42 bis 230400 bps connection
60	CONNECT 300/V42	V.42 300 bps connection
61	CONNECT 600/V42	V.42 600 bps connection
62	CONNECT 1200/V42	V.42 1200 bps connection
63	CONNECT 2400/V42	V.42 2400 bps connection
64	CONNECT 4800/V42	V.42 4800 bps connection
65	CONNECT 7200/V42	V.42 7200 bps connection
66	CONNECT 9600/V42	V.42 9600 bps connection
67	CONNECT 12000/V42	V.42 12000 bps connection
68	CONNECT 14400/V42	V.42 14400 bps connection
69	CONNECT 16800/V42	V.42 16800 bps connection
70	CONNECT 19200/V42	V.42 19200 bps connection
71	CONNECT 21600/V42	V.42 21600 bps connection
72	CONNECT 24000/V42	V.42 24000 bps connection
73	CONNECT 26400/V42	V.42 26400 bps connection
74	CONNECT 28800/V42	V.42 28800 bps connection
75	CONNECT 31200/V42	V.42 31200 bps connection
76	CONNECT 32000/V42	V.42 32000 bps connection
77	CONNECT 33600/V42	V.42 33600 bps connection
78	CONNECT 38400/V42	V.42 38400 bps connection
79	CONNECT 57600/V42	V.42 57600 bps connection

Code	Message	Meaning
80	CONNECT 115200/V42	V.42 115200 bps connection
81	CONNECT 230400/V42	V.42 230400 bps connection
82	CONNECT 300/MNP5	MNP5 300 bps connection
83	CONNECT 600/MNP5	MNP5 600 bps connection
84	CONNECT 1200/MNP5	MNP5 1200 bps connection
85	CONNECT 2400/MNP5	MNP5 2400 bps connection
86	CONNECT 4800/MNP5	MNP5 4800 bps connection
87	CONNECT 7200/MNP5	MNP5 7200 bps connection
88	CONNECT 9600/MNP5	MNP5 9600 bps connection
89	CONNECT 12000/MNP5	MNP5 12000 bps connection
90	CONNECT 14400/MNP5	MNP5 14400 bps connection
91	CONNECT 16800/MNP5	MNP5 16800 bps connection
92	CONNECT 19200/MNP5	MNP5 19200 bps connection
93	CONNECT 21600/MNP5	MNP5 21600 bps connection
94	CONNECT 24000/MNP5	MNP5 24000 bps connection
95	CONNECT 26400/MNP5	MNP5 26400 bps connection
96	CONNECT 28800/MNP5	MNP5 28800 bps connection
97	CONNECT 31200/MNP5	MNP5 31200 bps connection
98	CONNECT 32000/MNP5	MNP5 32000 bps connection
99	CONNECT 33600/MNP5	MNP5 33600 bps connection
100	CONNECT 38400/MNP5	MNP5 38400 bps connection
101	CONNECT 57600/MNP5	MNP5 57600 bps connection
102	CONNECT 115200/MNP5	MNP5 115200 bps connection
103	CONNECT 230400/MNP5	MNP5 230400 bps connection
104	CONNECT 300/MNP	MNP 300 bps connection
105	CONNECT 600/MNP	MNP 600 bps connection
106	CONNECT 1200/MNP	MNP 12000 bps connection
107	CONNECT 2400/MNP	MNP 24000 bps connection
108	CONNECT 4800/MNP	MNP 4800 bps connection
109	CONNECT 7200/MNP	MNP 7200 bps connection

Code	Message	Meaning
110	CONNECT 9600/MNP	MNP 9600 bps connection
111	CONNECT 12000/MNP	MNP 12000 bps connection
112	CONNECT 14400/MNP	MNP 14400 bps connection
113	CONNECT 16800/MNP	MNP 16800 bps connection
114	CONNECT 19200/MNP	MNP 19200 bps connection
115	CONNECT 21600/MNP	MNP 21600 bps connection
116	CONNECT 24000/MNP	MNP 24000 bps connection
117	CONNECT 26400/MNP	MNP 26400 bps connection
118	CONNECT 28800/MNP	MNP 28800 bps connection
119	CONNECT 31200/MNP	MNP 31200 bps connection
120	CONNECT 32000/MNP	MNP 32000 bps connection
121	CONNECT 33600/MNP	MNP 33600 bps connection
122	CONNECT 38400/MNP	MNP 38400 bps connection
123	CONNECT 57600/MNP	MNP 57600 bps connection
124	CONNECT 115200/MNP	MNP 115200 bps connection
125	CONNECT 230400/MNP	MNP 230400 bps connection
132	NUMBER LIST FULL	The delayed telephone number list cannot hold any more numbers.
133 xx	DELAYED NUMBER WAIT	The number is on delayed list and call is delayed for xxx minutes

Dial Commands

Dial commands let the modem originate a call to another modem. These commands can be used with either tone or pulse dial telephone systems.

Dialing — D

To dial a number, for example 555-1212, insert the D command in the dialing sequence.

AT D 555-1212

The modem dials the number, either pulse or tone, whichever is in effect, and takes the role of the originate modem.

Use spaces, hyphens, parentheses, or other punctuation, except dial modifiers, to make the command line easier to read and enter. For example, these are all treated the same:

```
AT D 1-800-555-1212
AT D 1 (800) 555-1212
ATD18005551212
```

The dial modifiers are as follows.

Command	Operation
T	Tone dialing
P	Pulse dialing
,	Insert a long pause (2 sec or value in S8)
W	Wait for 2nd dial tone
I	Flash (1/2 sec)
R	Switch to answer mode after dialing
;	Return to command mode after dialing
@	Wait for silence
S	Dial stored command line or number

Tone Dialing — T

To tone dial a number sequence, insert a T in the dial sequence.

```
AT D T 323-1111
```

In this example, the modem tone dials the telephone number. The dialing method selected remains in effect until changed.

Pulse Dialing — P

To pulse dial a number sequence, insert a P in the dial sequence.

```
AT D P 554-9902
```

Insert Long Pause — ,

To insert a long pause in the dialing sequence, use a comma. This inserts a 2 second delay (or the value in register S8).

```
AT D P 9, 1-800-554-1000
```

Here the modem pulse dials a 9, pauses for the telephone system to switch to an outside line, then dials the phone number. Comma pauses may be inserted consecutively if desired.

Wait for Second Dial Tone — W

To wait for second dial tone insert a W in the dialing sequence.

```
AT D 9 W 323-8000
```

Instead of using a comma pause for an outside line, wait up to 30 seconds (time specified by S7) for a second dial tone.

Hook Flash — I

To flash the switchboard, insert an exclamation mark in the dialing sequence.

```
AT D T 9W 323-8000 , !, #7 377
```

This inserts a 0.5 second on hook condition, usually for transferring a call or similar use.

In this example, the modem tone dials a 9, waits for the second dial tone, dials the phone number, pauses, flashes to start the transfer, pauses a second time, then uses #7 to transfer the call to extension 377.

Switching to Answer Mode after Dialing — R

To switch to answer mode after dialing, use an R at the end of the dial sequence.

```
AT D 554-2345 R
```

Use this command suffix to call an originate-only modem.

Remaining in Command Mode — ;

To remain in command mode after dialing, place a semicolon at the end of the dial sequence.

```
AT D 234-5678;
```

The modem will dial the telephone number entered but will not attempt to train when the remote service answers the call.

This is used to retain control so that further dialing tones may be entered, with the following:

```
AT DDTn;
```

where n= additional tones to be sent.

Wait for 5 Seconds of Silence — @

To wait for 5 seconds of silence (no answer back tone) after accessing an electronic service, use the @ command in the dialing sequence.

AT D 399-4700 @ 2251 ;

In this example the modem dials the number and, after the connection, waits for 5 consecutive seconds of silence. The modem then sends service code 2251 and returns to command mode for further input.

For example, you might enter a dollar amount for a banking transaction by entering

AT D 1400 ;

This sends the sequence 1400 and then returns to the command mode for further entries, according to the requirements of the banking service.

Dialing a Stored Telephone Number — Sn

To dial one of the previously stored numbers, enter Sn where n represents a stored telephone number location between 1 and 9.

AT D S9

In this example, the number stored in location 9 is dialed.

**Note**

DS and DS1 are the same location.

Autodial Number Location — *AUn

The *AUn command selects stored number n (n=1 to 9) to be autodialed. This is the autodial number, which is used for any autodial application.

Voice Calls

To make a voice call, dial the number with the telephone. To use the dial command for the call, enter the following dialing sequence:

AT D (number) ;

The ; modifier recalls the command mode and prevents the modem from training. The remote site must be answered by the telephone for the voice call to be successful.

Switching from Voice to Data

After dialing, place the modems at both ends in data mode by pressing the TALK/DATA button. The *DA1 command can also be used to change from talk mode to data mode.

Answering A Call

There are three ways to answer a call for a data connection:

- Manually
- AT Command
- Autoanswer

Manual Answer

When the phone rings, answer by pressing the TALK/DATA button.

AT Command Answer — A

The modem can be made to answer a call by entering ATA when the phone rings.

Autoanswer — S0

Autoanswer is controlled by register S0. S0 determines which ring the modem answers on. S0 can be loaded with a value between 1 and 255 for autoanswer. Entering AT S0=0 disables autoanswer. Decide which ring the modem is to answer on and set S0 to that decimal value. When S0 is one or greater, the modem automatically answers on the selected ring and connects with the calling modem.

**Note**

If the modem is set to respond to DTR the DTR signal must be on for autoanswer to work.

Caller ID — *ID

If the telephone company is providing Caller ID services to the local phone line, the V.3600 can report Caller ID to the DTE. *

Note

The communications software package may need reconfiguring to look for the "Caller Number:" message prefix so that it knows when to look for a phone number.

Command	Operation
*ID	Disable Caller ID
*IDI	Enable Caller ID

When Caller ID is enabled, one of the messages in Table 5-2 appears on the computer screen after the first RING message:

Table 5-2. Caller ID Messages

The modem sends this message...	If:
CALLER<sp>NUMBER: (505)555-1313	The number was delivered by the phone company
CALLER<sp>NUMBER:OUT<sp>OF <sp>AREA	The number was not available from the phone company
CALLER<sp>NUMBER:PRIVATE	Delivery was blocked by the caller
CALL FAILURE<sp>NUMBER: ERROR	The number was received in error

If the telephone company provides Enhanced Caller ID, the caller's name appears after the caller phone number.

Distinctive Ring — *DR

If the telephone company is providing distinctive ring service to the local phone line, the V.3600 can report the type of ring to the DTE. * The data communications software package must allow distinctive ring.

*Caller ID and Distinctive Ring are compatible only with USA standards.

Command	Operation
*DR=0	Disable Distinctive Ring
*DR=1	Enable Distinctive Ring

When distinctive ring is enabled, one of the messages in Table 5-3 appears on the DTE instead of the regular RING message:

Table 5-3. Distinctive Ring Messages

The modem sends this message...	If the Ring Was a:
RING A	Single ring (1 ring burst)
RING B	Double ring (2 ring bursts)
RING C	Triple ring (3 ring bursts)

Terminal Interface Commands

The EIA-232 interface connects the modem and DTE. Terminal interface commands control the action of the modem and the terminal in response to the signals being exchanged on the interface pins. Refer to Table 2-1.

Data Carrier Detect — &C

When using DCD to indicate a valid carrier, use the &C1 command. Some terminals and other devices require DCD on in order to communicate with the modem; if so, use the &C command.

Command	Operation
&C	DCD always on
&C1	DCD on when modem recognizes remote modem carrier or, if enabled, when protocol negotiation is complete.
&C2	DCD on except for 5 seconds after disconnect
&C3	DCD follows RTS on remote modem (simulated switched carrier V.13).

Note

AT&C3 is used to simulate switched carrier operation.

Note

For simulated switched carrier operation &C3 must be selected on both modems. Not available in the B103 and V21 modulation modes.

Data Set Ready — &S

These commands control the DSR signal generated by the modem to indicate that the modem is ready for operation. DSR must be on for some terminals and devices to communicate with the modem.

Command	Operation
&S	DSR always on
&S1	DSR on when off hook in data mode
&S2	DSR off for 5 seconds after disconnect then returns to on
&S3	DSR follows off hook (OH) signal

Data Terminal Ready — &D

In data mode DTR may be used for modem control.

Command	Operation
&D	The modem ignores DTR.
&D1	The modem goes to command mode from data mode when DTR goes from on to off.
&D2	Disconnects when DTR goes from on to off; disables autoanswer while DTR is off.
&D3	Disconnects, recalls command mode, and resets the modem to a stored configuration when DTR goes from on to off.
	In dial line mode the modem disconnects; in leased line, the modem retrains.

Note

If DTR controls dialer is selected, selecting DTR active will cause an autodial after an off-to-on transition of DTR.

Serial Port Ring Indicator (Pin 22) — \R

The \R commands determine how the ring indicate signal operates on pin 22 of the EIA-232 DTE connector.

Command	Operation
\R	Causes ring indicate signal on pin 22 to turn on (high) during each ring and remain on during the call
\R1	Causes ring indicate signal on pin 22 to turn on (high) during each ring and turn off (low) when the call is answered

Request to Send / Clear to Send — &R

When the modem is operating in nonbuffered mode (direct mode) or in synchronous mode, &R enables the RTS-to-CTS delay determined by the value in S26. &R1 forces CTS high and the modem ignores RTS (default). With &R2 selected, CTS goes high when carrier is detected. &R9 forces CTS to follow the state of RTS without delay.

Command	Operation
&R	Enables RTS-to-CTS delay
&R1	CTS forced on
&R2	CTS follows DCD
&R9	CTS equals RTS

Note

RTS/CTS delay is not valid in buffered mode or with error control enabled.

Note

With &R2 selected, XON/XOFF is the only valid method of flow control and &C and &C1 are the only valid carrier detect options.

DTE Controlled Fallback Rate (Pin 23) — *FB

Pin 23 of the EIA-232 DTE connector provides signal input to the modem for DTE fallback. If the modem is not using DTE fallback, set this option to ignore pin 23. To cause the modem to act on high/low levels of pin 23, enable this option. Negative level forces a higher rate for primary data rate; positive forces a lower rate providing a fallback rate.

Command	Operation
*FB	Ignore pin 23
*FB1	Transition on pin 23 changes speed

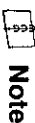
General Commands

This series of commands controls various standard options that in most cases apply to any mode of operation.

Changing from Data Mode to Command Mode — +++

To exit data mode and go to online command mode, press the escape character three times (+ is the default). Pause for the length of time set by register S12 (1 second is the default) before and after the +++ to ensure the modem recognizes the escape command.

This sequence temporarily suspends data mode transmissions and allows command mode operations without breaking or otherwise disturbing the telephone line connection. The modem responds with OK when it detects the escape code. Return to data mode by entering the O command.



Note
The AT command set must be enabled.

Local Character Echo — E

Type AT without a carriage return. If the screen shows AT character, echo is correct. Proceed with other commands as desired.

If the screen shows AATT, enter the E command to correct the double characters or disable character echo by the modem.

If the screen shows no characters, enter the E1 command to turn modem echo on or enable local echo on the terminal.

Command	Operation
E	Echo off
E1	Echo on

Online Character Echo — F

In some lower speed modems the F command determines if characters are echoed to the DTE from the modem when online. This function is generally controlled by the communications software. The modem does not support online character echo.

Hanging Up — H, H1

To end a call, enter the H command. This tells the modem to disconnect and go on hook. The modem must be in command mode to use this command.

Enter the H1 command to take the modem off hook. The modem automatically goes off hook when a dial command is keyed in.

Fast Disconnect — H2, H3

The results of the H command can be modified by the H2 and H3 commands. H2 or H3 will not cause a hang up but will affect the method of hanging up the next time the H command is issued. If H2 is entered, the H command will hang up according to CCITT V.32 standards. If operating in V.32 bis mode the H2 command could take several seconds. If H3 (the fast command) is entered, the H command will hang up much more rapidly at those speeds.

Command	Operation
H	The modem hangs up.
H1	Forces modem off hook
H2	Sets H command to normal hangup procedure (long space, cleardown, protocol)
H3	Sets H command to fast hang up

EPR0M Check — I

PC software packages may issue the I command to verify the modem will support all commands needed by the software package. The modem returns ASCII characters representing the model and revision level. To request the checksum to be calculated on the EPR0M, enter the I1 command. The modem returns four ASCII characters representing the cyclic redundancy check (CRC) in hexadecimal form. Enter the I3 command to request the product version.

Command	Operation
I	Request product code
I1	Request EPR0M checksum value
I3	Request product version
I4	Returns Motorola V.3600
I5	Last disconnect reason

Speaker Volume L

The L commands offer three volume levels.

Command	Operation
L, L1, L2	Speaker volume low
L3	Speaker volume high

Speaker Control — M

The M commands enable or disable the speaker for monitoring purposes.

Command	Operation
M	Disables the speaker
M1	Disables the speaker while receiving a carrier signal
M2	Speaker always on
M3	Disables the speaker while dialing and after a carrier is detected

Return Online — O

Use the O command when you are operating in the online command mode and need to return to data mode. It returns the modem to the same mode (originate or answer) that it was in before escaping to the (online) command mode. Enter the O1 command to cause a retrain to occur before going back to data mode.

Long Space Disconnect — Y

One method of disconnecting two modems is called long space disconnect. When any disconnect condition is detected by the local modem, it will send 4 seconds of data space condition to the remote modem before disconnecting. This signals the remote modem to disconnect. The local modem will disconnect if it receives 1.6 or more seconds of data space condition from a remote modem. If break sequences of 1.6 or more seconds are to be sent, enter the Y command to disable this feature and prevent unintentional disconnects.

Note

This option must be disabled if SDLC NRZI data is used.

Command	Operation
Y	Long space disconnect off
Y1	Long space disconnect on

V.22 bis Guard Tones — &G

Guard tones are not used in the United States. If required where operating the unit, select the appropriate guard tone.

Command	Operation
&G	No guard tone
&G1	550 Hz guard tone
&G2	1800 Hz guard tone

Asynchronous / Synchronous Mode Selection — &M

The &M commands select synchronous or asynchronous operation and synchronous dial method.

Use register S30 to select NRZ/NRZI for data format if using SDLC.

Command	Operation
&M	Async data/dialer mode (V.25 bis disabled)
&M1	Sync data mode / async dialer
&M2	Sync data mode / DTR diats if active
&M3	Sync data mode / manual dial
&M4	Sync data mode (ASCII) with V.25 bis BISYNC dialer
&M5	Sync data mode (NRZ) with V.25 bis SDLC dialer
&M6	Sync data mode with V.25 bis async dialer
&M7	Async data mode with V.25 bis async dialer
&M8	Sync data mode (EBCDIC) with V.25 bis BISYNC dialer
&M9	Sync data mode (EBCDIC, NRZ) with V.25 bis async dialer
&M10	Sync data mode (ASCII, NRZI) with V.25 bis SDLC dialer
&M11	Sync data mode (EBCDIC, NRZI) with V.25 bis SDLC dialer

IMPORTANT: Synchronous DTE must be available to communicate with the modem if the V.25 bis dialer is enabled.

Make / Break Dial Pulse Ratio — &P

Use the &P command for the dial pulse to be on for 39% and off for 61% of one cycle. Use the &P1 command for the dial pulse to be on for 33% and off for 67% of one cycle.

Command	Operation
&P	39% : 61% US and Canada
&P1	33% : 67%

Synchronous Transmit Clock Source — &X

The &X commands select internal, external, or receive clock as the transmit clock source.

Command	Operation
&X	Internal clock
&X1	External clock
&X2	Receive clock

V.34 Rate Selection Thresholds — *TH

The *TH commands sets the V.34 rate selection thresholds. The V.34 modulation dynamically selects the optimum bit rate to run, based on line quality.

Command	Operation
*TH	Low V.34 threshold (10^{-6} BER)
*TH1	Medium V.34 threshold (10^{-4} BER)
*TH2	High V.34 threshold (10^{-2} BER)

V.34 Asymmetric Bit Rates — *AS

The *AS command enables or disables the V.34 asymmetric bit rate capability. This feature allows the modem to run different bit rates on the receiver and transmitter.

Command	Operation
*AS	Disable V.34 asymmetric bit rates
*AS1	Enable V.34 asymmetric bit rates

Modulation *MM

The *MM command sets the current modulation type to use when attempting to make a connection. Using this command automatically selects the maximum DCE speed (%B) for the selected modulation.

Command	Operation
*MM	Automode (typically used on dial line)
*MM1	V.21
*MM2	B103
*MM3	Reserved
*MM4	B212A

Command	Operation
*MM5	V.22 bis
*MM6	V.27 bis 4-wire leased only
*MM7	Reserved
*MM8	V.29 4-wire leased only
*MM9	Reserved
*MM10	V.33 4-wire leased only
*MM11	V.32 bis
*MM12	V.34

Maximum DCE Speed — %B

The %B commands set the originating DCE speed to follow the DTE speed. When originating a call the two modems will not connect at a speed faster than the lower DCE speed setting of the two modems. To allow the modem to transmit data at a speed different from DTE speed, enter the %Bn command where n=1 to 18.

Command	Operation
%B	Use DTE speed
%B1	300 bps
%B2	1200 bps
%B3	2400 bps
%B4	4800 bps
%B5	9600 uncoded bps *
%B6	9600 bps
%B7	7200 bps
%B8	12000 bps
%B9	14400 bps
%B10	600 bps
%B11	16800 bps
%B12	19200 bps
%B13	21600 bps
%B14	24000 bps
%B15	26400 bps

Command	Operation (Continued)
%B16	28800 bps
%B17	31200 bps
%B18	33600 bps

* Valid for V.32 bis modulation only



Note

Use the %B command after the *MM command when specific modulations are required.

Minimum DCE Speed — %L

If the modem connects at a rate lower than the minimum DCE speed, it disconnects the link automatically.

Command	Operation
%L	Disabled
%L1	Disabled
%L2	1200 bps
%L3	2400 bps
%L4	4800 bps
%L5	9600 uncoded bps *
%L6	9600 bps
%L7	7200 bps
%L8	12000bps
%L9	14400 bps
%L10	600 bps
%L11	16800 bps
%L12	19200 bps
%L13	21600 bps
%L14	24000 bps
%L15	26400 bps
%L16	28800 bps
%L17	31200 bps
%L18	33600 bps

* Valid for V.32 bis modulation only

Auto Retrain — %E

This option allows the modem to automatically retrain in response to poor received signal quality without reconnecting. The modem always responds to a retrain request from the remote modem.

Command	Operation
%E	Disable auto retrain
%E1	Enable auto retrain

Automatic Rate Adaption — %R

Automatic rate adaption (ARA) allows the modem to automatically decrease the DCE rate when the allowable bit error rate is exceeded. If the line condition improves the modem automatically increases the rate.

Select this feature by front panel operation or AT command. Options include: disabled (factory default), low (BER= 1 in 10⁵), medium (BER= 1 in 10⁴), high (BER= 1 in 10³).

The following guidelines apply to automatic rate adaption:

- Automatic rate adaption is disabled during direct mode.
- Manual rate adaption is disabled from the front panel when automatic rate adaption is enabled.
- Only one increment or decrement in the DTE rate is allowed at a time during rate adaption from the initiating modem.
- When online, initiator rate adaption occurs a maximum of every 12 to 14 seconds from the last occurrence of a rate adaption.
- After the modem drops data rate because of poor signal quality, the line must improve by approximately 2.5 dB before an increase in rate can occur.

Command	Operation
%R	Disable automatic rate adaption
%R1	Enable automatic rate adaption using low BER: 1 in 10 ⁵
%R2	Enable automatic rate adaption using medium BER: 1 in 10 ⁴
%R3	Enable automatic rate adaption using high BER: 1 in 10 ³

Manual Rate Adaption — *RR

The *RR command forces the modem to re-adapt the DCE rate of the remote modem.

Command	Operation
*RR	Rate adaption to 2400
*RR1	Rate adaption to 4800
*RR2	Rate adaption to 7200
*RR3	Rate adaption to 9600
*RR4	Rate adaption to 12000
*RR5	Rate adaption to 14400
*RR6	Rate adaption to 16800
*RR7	Rate adaption to 19200
*RR8	Rate adaption to 21600
*RR9	Rate adaption to 24000
*RR10	Rate adaption to 26400
*RR11	Rate adaption to 28800
*RR12	Rate adaption to 31200
*RR13	Rate adaption to 33600

Product Revision Level %V

The %V command displays the product revision level.

Online Quick Reference — \$H

The \$H command displays an AT command set quick reference. The Enter key terminates the page displays and any other key scrolls through the pages.

Command	Operation
\$H	Displays online quick reference
\$H=<string>	Search online quick reference for string.

Product Serial Number — \$V

The \$V command displays the product serial number.

Talk / Data — *DA

The *DA commands select talk or data mode.

Command	Operation
*DA	Switches modem to talk
*DAI	Switches modem to data

V32 Fast Train — *FT

The V32 fast train option is used to reduce training time when operating over high quality, limited distance dial, or 2-wire leased lines.

Command	Operation
*FT	Disable fast train
*FTI	Enable fast train

Incoming Call — *IC

The *IC command makes the modem disregard an incoming call.

Line Current Disconnect — *LC

Dial line operation only. The modem can be configured to disconnect upon loss or interruption of telephone line current.

Command	Operation
*LC	Line current disconnect off
*LC1	Line current disconnect short (8 ms)
*LC2	Line current disconnect long (90 ms)

Disable AT Command Set — *NT

The *NT command disables the AT command set.

The *NTI command allows the user at a remote modem to enable AT command operation of another modem via remote configuration.

Command	Operation
*NT	Disable AT command set
*NTI	Enable AT command set at remote site

If the AT command set of a local modem is accidentally disabled and must be recovered locally, reset the options through the front panel LCD, Main Menu #5, submenu CHANGE DTE OPTIONS?, "AT COMMAND SET" section on page 4-8.

Dial Line Transmit Level — *TDn

Command	Operation
*TDn	Sets dial line TX level to <i>n</i> where <i>n</i> is a number 9 through 30 corresponding to a TX level of -9 to -30 dBm

Private Line Operation**Note**

For a 2- or 4-wire leased line connection to succeed, one modem must be configured as forced answer and the other modem as normal originate. Both modems should have only one protocol, MNP or LAPM, enabled and Protocol fallback must be disabled. DCE line speed must be the same for both modems.

4-Wire Operation

In 4-wire operation, the modem is a full-duplex, leased-line modem requiring a dedicated 4-wire leased line. Only point-to-point dedicated leased lines are supported. The 4-wire leased line connects to the TEISET/LEASED LINE jack on the modem rear panel. Dialing is not necessary. When connected via leased line the modems will train and begin communicating with each other. The DIAL jack can be used to connect a 2-wire dial-up line for dial backup.



Note
The V.3229, V.3227, V.3225, and V.3257 modems use V.33 as the modulation type. The V.3600 must be set up to V.33 to connect to these modems.

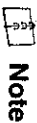
2-Wire Operation

In 2-wire operation, the modem is a full-duplex modem able to operate over 2-wire leased or PSTN lines.

2-Wire Leased Line Operation

The 2-wire leased line is connected to the TELSET/LEASED LINE jack; the DIAL jack connects to a 2-wire dial-up line for dial backup. The leased line connects the local and remote modems directly and dialing is not necessary. One of the modems must be configured for forced answer and the other for normal originate. When connected via leased line the modems will connect and begin communicating with each other.

The &L command is used to select private line (leased line) operating mode. The *OR commands select the origination or answer mode when operating in the leased line configuration.



Note
DTR must be held high in 2-wire or 4-wire leased line operation. This is accomplished by DTE control, wiring pin 20 of the digital interface cable high, or by selecting the option IGNORES DTR. If DTR is terminal controlled, loss of synchronization can be corrected by cycling DTR. This makes the modem initiate the 2-wire training sequence. DSR goes off during the training procedure.

2-Wire Dial-up Operation:

Connection to the telephone network is through the DIAL jack. A standard telephone can be connected to the TELSET/LEASED LINE jack for manual dialing.

Dial Backup

Dial backup allows the modem to switch to a dial backup mode if the data connection on the leased line is unacceptable for communications. This can be accomplished in two ways:

- Automatic - backup due to extended loss of carrier or 4 unsuccessful retrains in 3 minutes
- Manual - user determined using front panel controls or AT commands

In leased line operation, if both units have autodial backup enabled, one must be configured for forced answer. This prevents both units from dialing if the leased line fails.

IMPORTANT: Both methods will cause the modem to dial the prestored autodial number. The originate modem will wait for five seconds and then initiate the call. The answer modem will wait for a ring. The modems then train and begin communicating over the dial-up line. If the dial connection is unsuccessful after three attempts, a retrain on the leased line will be initiated.

In manual mode, the return to leased line is only done when commanded. In automatic mode the return to leased line is initiated after the lookback time in register S28 has elapsed. During the lookback test the dial backup connection will be terminated. If the leased line is not acceptable, the dial backup connection will be reestablished. If the leased line is acceptable, normal leased line mode is resumed.

When the unit attempts to return to leased line, the LCD displays LEASE LOOKBACK. If the leased line has been restored to service, data can be passed approximately 10 seconds after LEASE LOOKBACK was initiated. The LCD will continue to display LEASE LOOKBACK for slightly more than a minute.



Note
A diagnostic test initiated during dial backup mode terminates when the modem performs a leased line lookback.

Dial / Leased Line — &L

&L selects line operation as required:

Command	Operation
&L	Dial (switched)
&L1	Leased (private) 2-wire
&L2	Leased (private) 4-wire

Dial Backup *DB

Command	Operation
*DB	Manual dial backup operation
*DB1	Automatic dial backup operation

Return to Leased Line from Dial Backup — *LB

During dial backup operation, *LB makes the modem return to leased line operation.

During leased line operation with forced answer enabled, *LB makes the modem wait for a dial backup call.

Manual Dial Backup — *LD

*LD dials the autodial number if the modem is in originate mode with manual dial backup selected. Available in leased line operation only.

Answer / Originate — *OR

*OR forces the modem to answer or originate mode. This option is used during 2- and 4-wire leased line operation with error correction and/or dial backup.

Command	Operation
*OR	Force originate
*OR1	Force answer

Leased Line Transmit Level — *TLn

Command	Operation
*TLn	Sets leased line TX level to <i>n</i> where <i>n</i> is a number 0 through 30 corresponding to a TX level of 0 to -30 dBm

Configuration Commands

These commands recall various profiles for insertion into the active profile, store the active profile and telephone numbers in nonvolatile memory, and designate the powerup profile. Remote configuration is discussed on page 5-41.

Configuration Profiles

Modem operations are controlled by option settings selected from factory defaults stored in ROM, active settings stored in RAM, and custom settings stored in nonvolatile memory. These three code storage locations are called profiles.

Active Profile

The active profile holds the current option settings and is used by the modem for all operations and functions. Any active profile option can be changed to meet an immediate requirement. The active profile is maintained in volatile memory referred to as S-registers.

Stored Profile

When an active configuration is established that meets all operating requirements, it can be transferred to one of the stored profiles. Two stored profiles are available for greater versatility.

If the active profile has been temporarily changed it can be reset to either of the stored profiles with the Z command. The &Y command selects one of the two stored profiles to be the powerup profile.

Factory Profile

The factory configurations are stored in ROM and cannot be changed by the user; they can be transferred to the active profile and then modified to fit a specific application if needed. The &F command recalls one of the nine factory configurations.

Storing a Configuration — &W

The &W commands store the current configuration options in one of two nonvolatile memory locations (Figure 5-1). The stored configurations are retained in memory even when power is off, or until &W is issued with a new configuration.

Command	Operation
&W	Store options to user option set 1
&W1	Store options to user option set 2

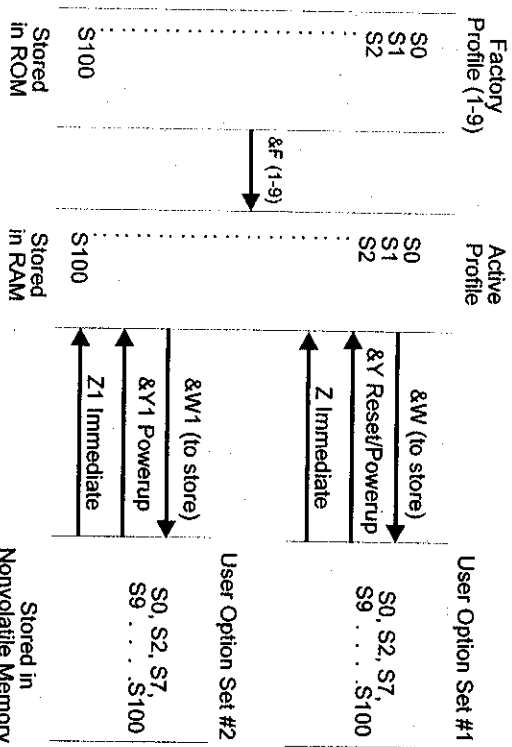


Figure 5-1. Configuration Storage and Recall

Powerup Option Set — &Y

The &Y command determines which user option set is loaded during powerup and reset.

Command	Operation
&Y	Powerup with user option set 1
&Y1	Powerup with user option set 2
&Y?	Displays currently selected powerup option set

Load Factory Options — &Fn

The &Fn command loads one of the existing configuration sets, providing a complete configuration for a compatible system/network environment. Refer to the Appendix H for a complete list of the options in each set.

Command	Operation
&F, &F1	Load factory option set 1 (async dial-up with V.42 bis)
&F2	Load factory option set 2 (async dial-up without V.42 bis)
&F3	Load factory option set 3 (sync dial-up without V.42 bis)
&F4	Load factory option set 4 (sync 4-wire leased line without V.42 bis)
&F5	Load factory option set 5 (async 4-wire leased line with V.42 bis)
&F6	Load factory option set 6 (async 4-wire leased line without V.42 bis)
&F7	Load factory option set 7 (sync 2-wire leased line normal originate)
&F8	Load factory option set 8 (sync 2-wire leased line forced answer)
&F9	Load factory option set 9 (sync V.25 bis dialer)

Reset to Stored Configuration — Z

The Z commands reset the modem and immediately load either user option set 1 or 2 as the current configuration. This command saves time once a proven configuration is established.

Command	Operation
Z	Resets the modem and immediately loads user option set 1
Z1	Resets the modem and immediately loads user option set 2

View Configuration Profiles/Received Signal Options &V

This command lets the user view the current configuration profile in the form of S-register values. &V1 displays the received signal options.

Command	Operation
&V	Displays configuration profiles
&V1	Displays received signal options
&V2	Displays active profile

Storing a Telephone Command Line — &Zx=n, *CNx,n, *ND

Nine stored phone number locations of up to 31 characters each are available in nonvolatile memory. Normally, one phone number per location is accommodated. However, a phone number longer than 31 characters can overflow into the next location. Any spaces remaining in the overflowed location cannot be used for another number. The stored phone number is retained until replaced by another number. Modem power can be turned off without affecting stored information.

To store a telephone command line in a location, enter the &Zx=n command where x = the location and n = the number:

AT &Z 8 = 554-1212

In this example the command sequence to dial the indicated number is stored at location 8 for later dialing.



Note

Neither the AT prefix nor the D command should follow the &Zx=n.

- &Zx=n - Stores telephone number n, including dial modifiers, at location x (0-9, up to 31 digits).
- *CNx, n - Stores telephone number n, including dial modifiers, at location x (0-9, up to 31 digits).
- *CNx, - Clears telephone number location x
- *ND - Displays the stored numbers (1-9).

Retaining / Restoring Options — *RO

This option is used when the modem is shared by two or more DTEs.

When options are retained, the current configuration is not altered at disconnect. With options restored, the modem returns to the previously stored configuration on disconnect.

When options are restored at disconnect, the following commands return OK but are not executed:

- *CNStore telephone number
- &ZStore telephone number
- &FRecall factory configuration
- &WStore current configuration

Command	Operation
*RO	Retain options at disconnect
*ROI	Restore options at disconnect

Soft Download Password — %P1, \$Y

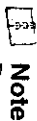
Select a numeric password to permit/inhibit software downloading via flash memory if desired. The process is detailed in Appendix H.

Command	Operation
%P1=PW	Set software download password to 0-99999999
%P1=D	Disable software download
%P1?	Display software download password
\$Y	Enable soft download flash

Remote Configuration

This mode of operation allows viewing or modifying the options of a remote modem that supports Motorola or Motorola UDS remote configuration. Remote configuration is performed using the front panel LCD or, more commonly, AT commands from the local terminal.

Remote configuration is initiated by the local (master) modem through a proprietary protocol, a security code, and an acknowledgment from the remote (slave) unit to be modified. The security code is inserted and provides protection from unauthorized entry. The modems are shipped from the factory without a security code.



Note
Remote configuration is supported at all rates except 300 bps.

Remote Configuration Security

The correct security code must be received by the remote modem before remote configuration can be established. Once established, the local DTE becomes a virtual terminal and can serve both local and remote modems. After starting remote configuration, the local DTE serves the remote modem.

To return DTE service to the local modem while in remote configuration, issue the +++ escape sequence.

Return DTE service again to the remote modem by issuing the O command. Switching DTE service between local and remote modems may be performed as needed.

To exit remote configuration, return DTE service to the local modem. The &T command will exit remote configuration mode.

Remote configuration may be entered immediately after dialing by placing the remote configuration command (%T=), without the = sign and followed by the security code, at the end of the dial string.

Remote Security Code — %P=

A security code prevents unauthorized access to remote configuration mode. This code is separate from low and high security passwords, which are discussed in Chapter 8. The security code is user programmable and can be set to any value from a single 0 to any combination up to 99999999 using the %P= (desired code) command.

Example: If the remote modem security code is 12345, the local modem must include this code in the initialization string before the remote modem responds.

Command	Operation
%P=	Sets security code to a value 0 to 99999999 entered after the equal sign
%P?	Requests local security code to be displayed
%P=D	Access for remote configuration is not possible when security code is disabled
%P=(blank)	Clears security code

The %P=D command disables remote configuration. To enable remote configuration, insert another security code.

IMPORTANT: Do not forget your remote security code. Keep your code in a safe place. If you do forget your code, contact Technical Support. Refer to the "Calling Technical Support" section on page 12-2.

Entering Remote Configuration — %T=, &T

This mode of operation allows you to view or modify the option set of a compatible remote modem. Enter the %T= (security code of remote) command to initiate remote configuration.

The modem is shipped from the factory with security code (blank). This allows remote configuration by using (blank) as the security code.

Command	Operation
%T=	This command followed by the correct security code establishes remote configuration
&T	Exits remote configuration

Remote Configuration can also be specified by the dial command by placing %T (password) after the dial digits (the equal sign is left off). For example,

ATD 555-1212%T01234

Enabling/Disabling Remote Configuration — *RA

The *RA commands enable and disable remote configuration.

Command	Operation
*RA	Disable remote configuration
*RA1	Enable remote configuration

Remote Configuration DTE Speed — *RB

This option forces DTE speed to a particular setting, if desired.

Command	Operation
*RB	Remote configuration DTE speed = 300 bps
*RB1	Remote configuration DTE speed = 600 bps
*RB2	Remote configuration DTE speed = 1200 bps
*RB3	Remote configuration DTE speed = 2400 bps
*RB4	Remote configuration DTE speed = 4800 bps
*RB5	Remote configuration DTE speed = 7200 bps
*RB6	Remote configuration DTE speed = 9600 bps
*RB7	Remote configuration DTE speed = 12000 bps
*RB8	Remote configuration DTE speed = 14400 bps
*RB9	Remote configuration DTE speed = 16800 bps
*RB10	Remote configuration DTE speed = 19200 bps
*RB11	Remote configuration DTE speed = 21600 bps
*RB12	Remote configuration DTE speed = 24000 bps
*RB13	Remote configuration DTE speed = 26400 bps
*RB14	Remote configuration DTE speed = 28800 bps
*RB15	Remote configuration DTE speed = 28400 bps
*RB16	Remote configuration DTE speed = 57600 bps
*RB17	Remote configuration DTE speed = 115200 bps

Remote Configuration Format — *RF

Set word length, parity, and stops for remote configuration.

Command	Operation
*RF	7 data bits, mark parity, 1 stop bit
*RF1	7 data bits, no parity, 2 stop bits
*RF2	7 data bits, odd parity, 1 stop bit
*RF3	7 data bits, even parity, 1 stop bit
*RF4	8 data bits, mark parity, 1 stop bit
*RF5	8 data bits, no parity, 1 stop bit
*RF6	8 data bits, odd parity, 1 stop bit
*RF7	8 data bits, even parity, 1 stop bit

Remote Configuration Saving or Discarding Options — *RQ

This option allows the opportunity to discard an undesirable option.

Command	Operation
*RQ	Save remote configuration option selection and exit
*RQ1	Discard remote configuration option selection and exit