212 EXECUTIVE II AUTODIALING MODEM

INSTALLATION AND OPERATION INSTRUCTIONS

CASE

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Issue 1, May 1988

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Publication Services

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NOTICE

CASE COMMUNICATIONS INC. may incorporate enhancements in the product and change the product specifications described in this manual at any time and without notice.

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FOREWORD

Congratulations! You are now the owner of one of the finest and most versatile modems on the market today—the CASE 212 Executive II. This modem has many features that will provide you with many years of fast and reliable data communications—automatic dialing, redialing, and linking, automatic computer logon, and much more.

Before operating the modem, take some time to go through this manual to acquaint yourself with it and your modem. This will let you get the most from your modem and from your data communications system.

88034-0

The CASE 212 Executive II Modem

PRODUCT DESCRIPTION

The CASE 212 Executive II Modem is an automatic pulse or tone dialing dual-speed, full duplex modem that's controlled from either its front panel or from a computer terminal keyboard. When keyboard controlled, you can operate the modem in either the CASE mode or in the AT command mode.

The modem contains an integral automatic dialer that makes manual dialing unnecessary as well as a speaker that lets you monitor calls during manual or automatic dialing. You can also monitor calls on the terminal display. The 212 Executive II features a full array of soft options selected via the keyboard and convenient hard (switch selectable) options used to select the operating mode.

The modem is used over two-wire Direct Distance Dial (DDD) switched network and provides serial binary data transmission and reception in the following speeds and formats:

- 0 to 300 bps synchronous, frequency shift keyed (FSK).
- 1200 bps character asynchronous, four-level phase shift keyed (PSK), 8, 9, 10, or 11-bit selectable.
- 1200 bps synchronous, PSK.

COMPATIBILITY

The Excutive II Modem is compatible with CASE and Western Electric 103, 113, and 212A modems.

CONFIGURATIONS

The 212 Executive II is available as either a desk modem or a card modem, and comes with A-leads in the telephone line interface for use with key telephone systems. D-lead operation is available for use with special, customer-provided calling equipment (contact CASE for D-lead operation). See Table A, Configurations.

BATTERY REPLACEMENT

The modem has an internal battery to maintain its memory when power is interrupted. The battery source is connected

instantaneously any time normal power is removed, and has an expected life of more than two years.

Table A. Configurations

Device	Part Number
212 Executive II desk modem	905-5216-001
* 212 Executive II card modem	905-5216-002
† Six position, four conductor telephone line cord (furnished)	115-0414-002
10 Vac stepdown transformer with integral cord and connector (furnished)	550-0335-01

* Card modems mount in CASE RM70 card cage. See Accessories for conversion instructions and for card cage and conversion kit part numbers.

† Six-conductor line cord required for D-lead applications. See Accessories for part number.

INSTALLATION

FCC INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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 the receiving antenna
- Relocate the computer
- Move the computer away from the receiver
- Plug the computer into a different outlet so that computer and receiver are on different branch circuits

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: *How to Identify and Resolve Radio-TV Interference Problems.* This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

This equipment (as of the date of manufacture) is compatible with telephone company communications facilities with which it was intended to operate. However, if the telephone company changes its communications facilities, equipment, operation, or procedures such that this equipment is no longer compatible, CASE is not responsible for the cost of modification or replacement of the equipment.

Prior to installation, the telephone company must be notified of the intended installation. The FCC registration number and ringer equivalence number (located on label on circuit card and shown in Figure 1) must also be provided. A Universal Service Order Code (USOC) number for the telephone service jack must be specified for installation by the telephone company. Refer to Plugs and Jacks for jack descriptions. (Some jurisdictions permit user-installed phone jacks.)

The FCC does not allow this equipment to be connected to party lines or coin-operated lines.

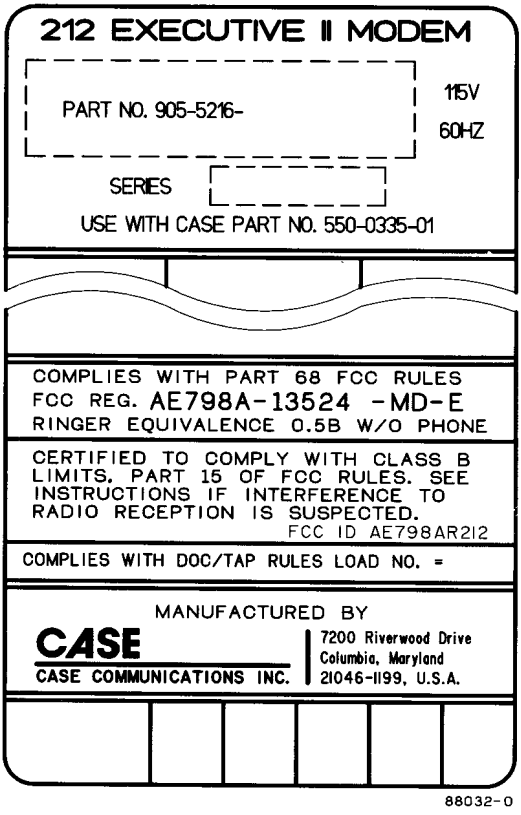


Figure 1. Identification Label

If there are problems with this equipment or a malfunction is suspected, immediately disconnect the equipment from the communications facility. Do not reconnect the equipment to the communications facility until the malfunction is corrected or it is determined that the equipment is operating properly. The telephone company can, at its option, discontinue service to malfunctioning equipment if the equipment is causing harm to the telephone network. Once the malfunction is corrected, service can be restored.

This equipment can be repaired only by CASE or an authorized repair station.

TAP CERTIFICATION

NOTICE: The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an approved method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified jack-plug-cord ensemble (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Existing telecommunications company requirements do not permit their equipment to be connected to customer-provided jacks except where specified by individual telecommunications company tariffs.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected

together. This precaution may be particularly important in rural areas.

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

DESK MODEM CONNECTIONS

The Executive II has four connectors on the rear panel. Figure 2 shows a typical hookup.

· The permissive arrangement is the only registered connection arrangement used with the modem. The transmit level is fixed at slightly less than —9 dBm. Connection is made to the telephone line via the TEL LINE modular jack on the rear panel. The fixed attenuation and jack arrangement provide fail-safe transmit level control. Numbers for the telephone line jacks are listed in Figure 2.

Location Requirements

The modem's small size lets you conveniently place it on a desk top. However, the modem must be physically located within the length of the interface cable that connects the DTE to the modem. Figure 2 provides the desk modem dimensions. Refer to Specifications for card modem dimensions.

Allow adequate air circulation to prevent internal heat buildup during operation. Do not cover ventilation holes. Avoid leaving the modem near heat sources such as radiators or air ducts or in a place subject to direct sunlight, mechanical vibration, or excessive dust.

DTE Interface Requirements

The DTE interface cable must not be more than 50 feet (15 meters) long. It must be equipped with a 25-pin Cinch or Cannon connector (DB25P) or equivalent to mate with the modem rear-panel connector. Refer to Interface Descriptions for a description of the signals on the interface connector pins.

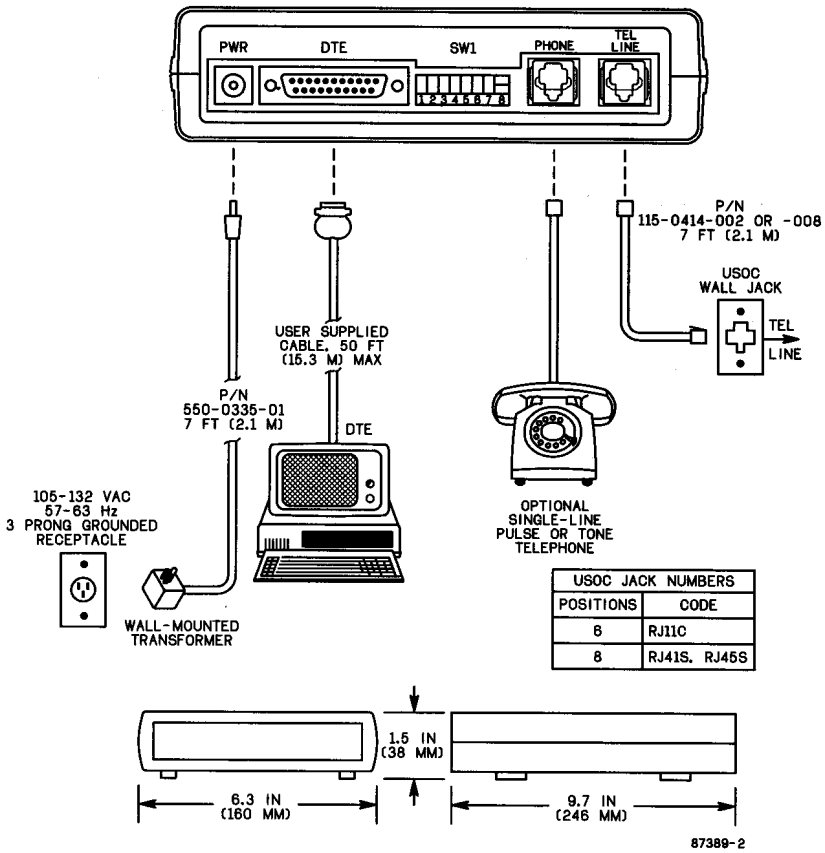


Figure 2. 212 Executive II Connections

TEL LINE Interface Requirements

The Executive II connects to the telephone system using the supplied single four-conductor cable with modular plugs at each end as shown in Figure 2. Refer to Figure 3 for cable part number and cabling information, and to Interface Descriptions for definition of the signals on the TEL LINE connector.

> **NOTE:** *Normally the modem operates properly when connected to a voice jack such as the RJ11C. In adverse line situations it might be necessary to connect the modem to a data jack such as the RJ45S to insure the telephone system provides data quality lines.*

To avoid interference during data transmission, use only individual telephone lines. Do not connect extension telephones to your modem. The telephone line cable should not be carried in the same cable run with cables between the modem and DTE or with lines connected to dc teletypewriter services.

Telephone Requirements

To manual dial and answer, connect an ordinary single-line pulue or tone dial telephone into the rear-panel PHONE jack (Figure 2). This allows alternate talk/data operation. Transfer between talk and data modes by using the TK pushbutton. You can originate voice and data calls manually. Incoming calls must be answered manually with the phone or automatically under control of the DTE when the TK pushbutton is in the data position (released) and automatic answer is optioned in.

Answer-only applications do not require a telephone. To enable automatic answering during normal system operation, release the TK pushbutton. To inhibit automatic answer, press the pushbutton in or disable the option (see Automatically Answering).

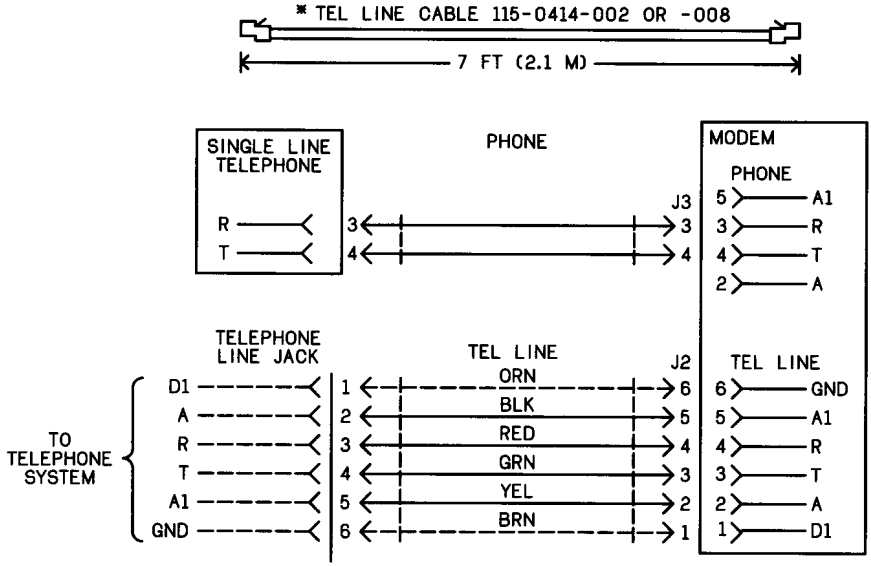
Refer to Interface Descriptions for definition of the signals on the PHONE connector.

Power Requirements

The modem operates on standard household power stepped down to 10 Vac by the three-prong wall-mounted transformer and cord supplied with the modem. Refer to Specifications for detailed power requirements.

The modem has no on/off power switch. To power up the modem:

(a) Connect the transformer cable to the PWR connector on the modem rear panel (Figure 2).



USOC JACK NUMBERS	
POSITIONS	CODE
6	RJ11C
8	RJ41S, RJ45S

88001-2

Figure 3. Permissive Connection to Telephone Network using 115-0414-002 Cable

(b) Insert the transformer into any standard three-wire household receptacle.

To turn power off, pull the transformer from the wall receptacle.

To avoid possible errors due to potential differences between ground for the modem and the DTE, the power receptacles for the modem and the DTE must be served from the same distribution panel.

CARD MODEM CONNECTIONS

The Executive II is available as a card modem (see Table A), or it can be converted from a desk modem. See Accessories for conversion kit part numbers and conversion instructions. The card modem mounts in the CASE RM70 card cage. All card modem connections are the same as for the desk modem except that the power is supplied to the card modem via the RM70 pigtail.

HARD OPTION SELECTION

The Executive II contains switch selectable options that must be set before operating the modem. These option settings are dependent upon your particular system configuration. The options can all be selected without tools or test equipment.

Figure 2 shows option switch location and Table B gives the switch settings. Option descriptions follow the table. Read the description of each before selection; some are interrelated.

Table B. Modem Options

Feature	Option	Mark Selection	Switch Position
*Carrier	Normal		†1 Up
	Always on		1 Down
*Clear to Send	Always On		†2 Up
	Normal		2 Down
*Data Set Ready	Normal		†3 Up
	Always on		3 Down
Dialer mode	CASE Mode		†4 Up
	AT Mode		4 Down
Automatic Answer	Enabled		†5 Up
	Disabled		5 Down
Dialer	Enabled		†6 Up
	Disabled		6 Down
Data Terminal Ready	Normal		†7 Up
	Always On		7 Down
	Not Used		8

* Some terminals require this option be always on to operate in the interactive mode.

† Factory setting.

NOTE: See also CASE and AT mode soft options (Tables E and G).

Option Descriptions

Carrier

Normal operation: Modem sends Carrier Detected signal to terminal when carrier is received. (CO lamp lights). (Factory setting.)

Always On: Modem Carrier Detected signal is on at all times (CO lamp follows carrier).

Clear to Send

Normal operation: Modem sends Clear to Send signal to terminal only when modem is ready to transmit. (Factory setting.)

Always On: The Clear to Send signal is on at all times.

Data Set Ready

Normal operation: Modem sends Data Set Ready signal to terminal only when modem is in data mode. (Factory setting.)

Always On: Data Set ready signal is on at all times.

Dialer Mode

CASE mode: Modem operates in CASE mode when dialer is enabled (see Dialer option). Press (cr) twice to wake up modem. When not awake, modem operates from front panel controls. (Factory setting.)

AT mode: Modem operates using Attention (AT) commands when dialer is enabled.

Automatic Answer

Enabled: Modem automatically answers data calls if DTR is on (TR lamp lighted), modem is off line and idle, and TK pushbutton is released. (Factory setting.)

Disabled: Does not answer automatically. Can be overridden by ATA command; defaults to switch setting upon modem reset.

Dialer

Enabled: Modem operates in CASE or AT mode as determined by switch 4. (Factory setting.)

Disabled: Modem operates from front panel only.

Data Terminal Ready

Normal: DTR signal controlled by DTE. (Factory setting.)

Always On: DTR on (TR lamp lighted) at all times.

Table C. Permanently Installed Features

Feature	General Description
Send space disconnect (Controlled by ATY in AT mode)	If the Data Terminal Ready lead turns off for 50 ms or longer, the modem transmits approximately four seconds of spacing before disconnecting.
Receive space disconnect	If continuous space is received for approximately 1.6 seconds, the modem automatically disconnects.
Loss of carrier disconnect (Controlled by Register S10 in AT mode)	If carrier is interrupted for longer than 700 ms during data mode, the modem disconnects. Interruptions of less than 175 ms are ignored.
Receiver respond to remote digital loopback	Modem is automatically placed in digital loopback by request from remote modem. Operates in high-speed mode only.

OPERATION

CONTROLS AND INDICATORS

The controls and indicators are shown in Figure 4. The front panel indicators and speaker are functional in the manual operating mode as well as the CASE or AT modes. Pushbuttons function in the CASE command mode and are disabled when the modem goes on line.

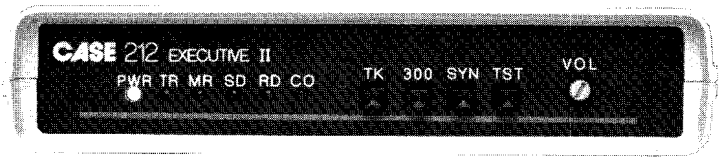


Figure 4. Controls and Indicators

Indicators

PWR (Power) Lights when power is applied to modem.

TR (Terminal Ready) Lights when the DTE is ready to send and receive data, or when optioned permanently on.

MR (Modem Ready) Lights when modem is ready to transmit and receive data, or when optioned permanently on.

SD (Send Data) Lights when the terminal is sending data to the modem.

RD (Received Data) Lights when the terminal is receiving data from the modem.

CO (Carrier On) Lights when carrier is being received from the remote modem.

Speaker Internally mounted. Lets you monitor the progress of a call while dialing. In CASE mode, enabled when remote modem carrier is off, disabled when carrier is on. Controlled by ATM in AT mode.

Controls

TK (Talk/Data) Latching pushbutton. When pressed, inhibits automatic answer and permits manually dialing or answering calls. When released, allows modem to transfer to data mode. When released, also enables automatic answer if:

- Modem is off line and in the idle mode
- TR lamp is on
- Modem is optioned for automatic answer

300 (300 bps) Latching pushbutton. Selects the modem speed when originating a data call. When pressed, the modem operates at 0 to 300 bps and when released, at 1200 bps. When answering a data call, the modem automatically adjusts to the remote modem speed; the pushbutton has no effect.

SYN (Synchronous) Latching pushbutton. Determines whether the modem operates in the asynchronous (pushbutton released) or synchronous (pushbutton pressed) mode. Affects only 1200 bps operation. When pressed after handshaking is complete, it transfers the modem from the asynchronous mode to the synchnonous mode.

TST (Test) Latching pushbutton.

Modem Off Line: Pressing the TST pushbutton starts the local self-test. This isolates the modem from the telephone line. The modem then automatically transmits a test pattern that is looped back to the receiver and checked for errors. The RD lamp flashes if an error occurs. The test can be performed at low or high speed using the 300 pushbutton.

Modem On Line: Pressing the TST pushbutton initiates the remote digital loopback test. This causes the remote modem to automatically enter the high-speed digital loopback mode. The local operator can then test the complete system including the local modem, the telephone lines, and an unattended remote station. Releasing the pushbutton returns both modems to on-line data mode.

VOL (Volume Control) Adjusts speaker volume.

SELECTING THE OPERATING MODE

To select the CASE mode, AT mode, or the manual mode, perform the following:

(a) Make sure power is disconnected by unplugging the transformer.

(b) Set the hard-option switches 4 and 6 as shown in Table B to select the operating mode.

(c) Make certain the modem is connected to the terminal, telephone line, and telephone (if used) as shown in Figure 2. Then reconnect the transformer.

(d) Turn on power to the terminal or computer. If you are using a computer, run your asynchronous communications program. Be certain to specify the operating speed (either 1200 bps or 0 to 300 bps) and other program parameters (stop bits, length, parity, etc.). Then select the keyboard operating mode.

> **NOTE:** *If the screen is blank when the AT mode is selected, enter* **AT&F(cr)**. *This restores selected AT default settings and presents a display on the screen.*

(e) The modem is now operating in the selected mode, and remains in this mode until the option switches are reset.

When the CASE mode is selected and power is applied, the modem does not wake up until the carriage return (**cr**) is pressed twice within a one-second interval. When operating in either the CASE or AT interactive mode, refer to Table D for keyboard selectable options in the CASE mode, or Table G when operating in the AT mode.

OPERATING PROCEDURES

The operating procedures are grouped according to the three basic operating modes; CASE, AT, and Manual. Each procedure starts on a separate page that contains the command heading at the outer top edge of the page. Where applicable, the keyboard command characters appear above the heading. The pages are grouped alphabetically according to the command heading. Each page contains all the information about the particular procedure, and

includes the command description, display examples, and related remarks.

Selected commands for the CASE and AT mode are also contained on cards at the back of the manual. Basic optioning is also included.

OPERATING IN THE CASE MODE

There are two types of autodialing you can use when you are operating in the CASE mode; direct (keyboard) dialing and stored-number dialing.

To keyboard dial, the telephone number is entered directly on the keyboard. In stored-number dialing, telephone numbers can be dialed by single keystroke. Stored-number dialing is generally used when the same telephone number is repeatedly called or the number contains many digits (outside line, wait-for-dial tone, area code, number, etc.). In both keyboard and stored-number dialing, the modem waits for a dial tone before starting to dial. See also Blind Dialing.

The modem can be optioned for pulse, tone, or combined pulse/tone dialing. The latter is especially useful when operating behind PBX systems that require pulse dialing to access an outside line, but the line is compatible with tone dialing. Special characters P and T can also be used with stored-number and keyboard dialing to make the modem switch from pulse to tone dialing (or vice versa) regardless of the soft option selection.

CASE MODE COMMANDS

Refer to Table D for a listing of CASE commands. Displays shown in the following examples are typical. Bold characters are keyboard entries; all others are modem responses. On full-duplex terminals, entries are displayed only if the dialer-echo option is chosen.

Table D. CASE Mode Commands	
***Keyboard Entry**	**Command Heading**
(cr) (cr)	Awaking the modem (modem wakeup)
(Any key)	Abort dialing commands
A	Answering a data call manually
(Option switch)	Automatically answering
Backspace (Control H)	Backspacing
—	Blind dialing
C	Clearing stored numbers
—	Dialer echo
—	Displaying dialing responses
D	Displaying stored numbers
G	Go back on line
H	Help menu
I	Initiating (originating) a data call manually
K	Keyboard dialing
Ln	Linking stored numbers
M	Multiple redial
O	Options selection (soft)
% (percent)	Pauses in dialing
P	Pulse dialing
PARITY	Parity setting
(Any user selected key)	Programmed disconnect
Q	Quitting the interactive mode (reset)
R	Redial (once)
Space bar	Spacing characters
(Panel switch)	Speed change
SC	Storing automatic logon
Sn	Storing numbers for autodialing
0 to 9	Stored number dialing
T	Tone dialing
X	Terminating a data call (hanging up)
—	Voice calls using autodialer and telephone
&	Wait for second dial tone

*— indicates more than one command required to perform the procedure. For description of lowercase n refer to the applicable command.

(cr)(cr)

CASE MODE
AWAKING THE MODEM

Command Description

To activate the modem in the CASE mode, press carriage return twice within a one-second interval. This command is functional only in the CASE interactive mode (option switches 4 and 6 up).

Example 1:

The sign-on message indicates the modem is in the CASE mode (and lists the software revision), and the modem speed selected by your terminal (in this example 1200 bps).

```
(cr)(cr)
CASE 212 EXECUTIVE II
     MODEM REV (#)
1200 BPS

H FOR HELP
$
```

Example 2:

Modem operates at 0 to 300 bps. Pressing H on the keyboard provides you with a complete list of modem commands.

```
(cr)(cr)
CASE 212 EXECUTIVE II
     MODEM REV (#)
LOW SPEED

H FOR HELP
$
```

Remarks

A garbled display instead of the sign-on message indicates a parity mismatch between the modem and your terminal. When this occurs:

- Enter the word **PARITY** on the keyboard (using uppercase characters only).

- The modem adjusts the parity and responds with the parity of your terminal (ODD, EVEN, ONE, or ZERO) and $ prompt symbol. The $ is the modem prompt character. It tells you the modem is in the CASE interactive mode and any command can be entered.

(Any Key)

CASE MODE
ABORT DIALING COMMANDS

Command Description

Any dialing command in progress can be aborted by pressing any key on the keyboard while the command is being executed.

	Example 1:
Initiate keyboard dialing.	**$K**
Telephone number you enter.	NUMBER: **123 4567 (cr)**
Press any key before the call is answered to abort the dialing and display the $ prompt.	DIALING: 123 45 **(any key)** $
	Example 2:
Initiate stored number dialing.	**$6**
Press any key before the call is answered to abort the call.	DIALING: P9& 123 4567. . **(any key)** $

Remarks

Aborting a dial command does not alter memory, but simply stops the execution of the command and any message printout.

A

CASE MODE
ANSWERING A DATA CALL MANUALLY

Command Description

When in the interactive mode, incoming calls can be answered manually and transferred to data mode using this command. The modem must be awake ($ prompt is present on display) or the automatic answer option must be disabled.

Example:

Make sure the TR lamp is lighted. When ringing is heard, answer the call in normal manner.

(cr)(cr)

When requested to enter data mode, press A on the keyboard. If necessary, press the carriage return twice to wake up the modem and obtain the $ prompt sign.

$A

When the modem responds with on-line message, data transmission can begin. Hang up the telephone.

ON-LINE

Remarks

When you get an incoming call from an autodialing modem, that modem might abort the call if you answer manually. Hang up the telephone then enable the automatic answer mode (see Automatically Answering).

(Option)

CASE MODE
AUTOMATICALLY ANSWERING

The 212 Executive II can automatically answer incoming calls. The modem does not automatically answer when it is awake in the CASE interactive mode or if the modem is on line. When a data call is terminated the modem returns to the interactive mode. However, if the quit-time-out option is enabled, the modem automatically exits the interactive mode two minutes after the call is terminated or after last keyboard entry. Pressing **Q** on the keyboard makes the modem exit the interactive mode at any time regardless of the quit-time-out option. To enable the automatic answer:

	Example:
When the prompt is displayed the modem does not automatically answer.	$
	(No message displayed)
Set option switch 5 Up (see Hard Options).	
Be sure modem is properly connected to DTE and TEL LINE interface and power is applied. If a telephone is connected to the PHONE jack, place handset on hook (hang up).	
At the terminal, run your asynchronous communications program or turn the Data Terminal Ready lead on. This lead	

can be optioned permanently on. Verify the TR lamp is lighted.

Press Q on the keyboard to exit the interactive mode.

```
$Q
CASE 212 EXECUTIVE II
     MODEM REV (#)
SIGN OFF
```

Release the TK pushbutton. All incoming calls are answered automatically.

Remarks

To quickly inhibit the automatic answer, press in the TK pushbutton and press carriage return twice to wake up the modem.

To permanently inhibit the feature, set option switch 5 Down.

Backspace (Control H)

CASE MODE
BACKSPACING

Command Description

Pressing the backspace key (or holding down the Control key while pressing H key) lets you correct an entry error when entering telephone numbers or text information on the keyboard. One character is erased for each execution (except when erasing the link character and register designation Ln; these are erased simultaneously).

	Example 1:
Initiate keyboard dialing.	**$K**
Pressing the backspace key or Control H deletes the digit 8.	NUMBER: **123 4568 (Control H)** 123 456
	Example 2:
Store a new number.	**$S5**
Old number is blank.	OLD: (blank)
Pressing the backspace key or Control H deletes the Link designation L7.	NEW: **519 555 1234 L7- (Control H)** 519 555 1234

Remarks

Some terminals have a backspace key, some have a cursor control pad that has a backspace. You can use these or use Control H.

(Option)

CASE MODE
BLIND DIALING

Some telephone systems have nonstandard dial tones that the modem might not detect. This results in a DEAD LINE message on the terminal display. The modem blind- dialing option allows the modem to dial when a dial tone is not detected but might be present. To select the blind dial option use the following example:

	Example:
Initiate keyboard dialing.	**$K**
Number being dialed.	Number: **555 1234 (cr)**
Dial tone not detected.	DIALING: .....DEAD LINE...ABORT (after 30 seconds)
	$
Make sure the telephone system is operating properly (dial tone can be heard on the speaker or on a telephone, indicating the dial tone is present).	
Press the letter O to select the soft options table.	**$O** OPTIONS 0 - EXIT 1 - DISC (Y/N)? -Y 2 - AUTO Q (Y/N)? -Y 3 - ECHO (Y/N)? -Y 6 - LNGTH (8/9/10/11)? -10 7 - BLIND (Y/N)? -N 8 - DIAL (A/T/P)? -AUTO 9 - ONLINE MSG (Y/N)? -Y

Press 7 to select option number, then press Y to enable the blind dial feature.	**#?7** 7 - BLIND (Y/N)? **-Y**
Press 0 (zero) to exit the option table. Then redial the number (via keyboard) and note that the modem waits three seconds then dials the number.	**#0** **$K** NUMBER: **555 1234 (cr)** DIALING: .....555 1234 ON-LINE

Remarks

Each period on the display represents a one-second wait for dial tone.

C

CASE MODE
CLEARING STORED NUMBERS

Command Description

This command erases all stored numbers from the directory. To prevent accidental erasure, verification of the clear command is requested. If yes, then Y must be pressed. Any other keyboard entry aborts the command.

	Examples:
When C is pressed on the keyboard, the modem asks you to verify entry:	$CLR(Y/N)?
If N (or any entry other than Y) is pressed the command is aborted.	$CLR(Y/N)**N**
If Y is pressed the modem responds with CLEAN to indicate that the directory has been erased of all telephone numbers.	$CLR(Y/N)**Y**–CLEAN•

Remarks

The modem provides a special register that stores the last telephone number dialed, whether it was dialed from the stored-number directory or from the keyboard. When the Clear command is executed, the last number dialed is also erased from memory.

(OPTION)

CASE MODE
DIALER ECHO

The modem has a dialer echo soft option that lets it be used with full-duplex terminals. Disabling the dialer echo suppresses the character echo and eliminates the double printing that is characteristic of half-duplex terminals (see Options Selection, Soft). This option is only active during interactive mode operation; once the modem goes on line it always operates full-duplex.

Example 1:

Double printout appears when commands are entered.

```
$KK
NUMBER: 112233 445577
```

Enter this command to select the soft options table. The command entry appears as a double printout.

```
$O
OPTIONS
0 - EXIT
1 - DISC          (Y/N)?          -Y
2 - AUTO Q        (Y/N)?          -Y
3 - ECHO          (Y/N)?          -Y
6 - LNGTH         (8/9/10/11)?    -10
7 - BLIND         (Y/N)?          -N
8 - DIAL          (A/T/P)?        -AUTO
9 - ONLINE MSG    (Y/N)?          -Y
```

Press 3 to select option number three, then press N to disable the echo.

```
#?3
3 - ECHO          (Y/N)?          -N
```

Press any key to redisplay the option table; press 0 (zero) to exit the option mode. Double printout is now eliminated.

```
#0
$K
NUMBER: 123 4567
```

	Example 2:
There is no echo when commands are entered.	$ NUMBER: DIALING: 123 4567
Select the option table (see above) then press Y for option number 3. Commands are now echoed.	**$K** NUMBER: 112233 44556677

(None)

CASE MODE
DISPLAY DIALING RESPONSES

After dialing the specified telephone number, the modem responds with one of the following displays.

Number called is busy.	BUSY.....ABORT
No ringback or busy, ringing but no answer.	NO ANSWER.....ABORT
No ringback or busy, possible problem with the phone system or call was answered manually.	DEAD LINE.....ABORT
Dialing alternate number.	(One of the above)...LINKING
Dialing same number again.	(One of the above)...DIALING
Answer tone was detected indicating call was answered automatically by remote modem.	ON-LINE

Remarks

If the programmed disconnect option is enabled, the disconnect character is displayed each time the modem goes on line. The disconnect character is selected when the programmed disconnect option is enabled. The character is displayed only if the on-line message option is also enabled. For example:

END = (user specified key)
ON-LINE

While the telephone number is being dialed, the speaker can be used to monitor the call to determine if the line is busy, ringing, or answered. The speaker does not replace the displays above, but supplements them.

D

CASE MODE
DISPLAY STORED NUMBERS

Command Description

This command displays all telephone numbers stored in the directory. If no number is stored in a particular register, the display is blank for that register.

	Example:
Enter this command.	**$D**
Sample of stored numbers.	#0 123 4567 #1 P9& T318 555 1234 % 9876-BANK #2 P9& T318 555 6789-HOME #3 614 555 1234 L4-OFFICE 1 #4 614 555 6789-OFFICE 2 #5 519 555 1234 L5-BANK #6 P9& 123 4567 #7 414 555 1234 L8-SITE 1 #8 213 555 2345 L7-SITE 2 #9 9& 987 6543 %% 616 555 1234 %% 98765-TEST CENTER (shown on one line on display)

Remarks

Although the / character must be used when entering text, it is replaced by the - character whenever the stored number and text are displayed.

When storing telephone numbers, the number can be secured to prevent the number from being displayed in the directory or when the number is dialed. Secured telephone numbers appear as follows in the directory (see Storing Numbers for Autodialing):

```
$D
#0  *--- -----
```

The asterisk indicates the telephone number is secured. The digits are replaced by dashes.

G

CASE MODE
GO BACK ON LINE

Command Description

This command lets you place the modem back on line without redialing, if the programmed disconnect command has been executed. In the following example, the END = D disconnect character has been previously specified by the user when enabling the programmed disconnect option.

	Example:
Dial from directory.	**$0**
Telephone number modem is dialing. Modem is on line. Data transmission begins.	DIALING: 123 4567 END = D ON LINE
Wait one second.	
Press disconnect character three times within one second.	**DDD**
Wait one second for modem prompt sign to appear on display. Any CASE mode command can now be entered.	$
To go back on line, press G.	**$G**

Remarks

Refer to Programmed Disconnect command for description of disconnect character option.

When performing a remote digital loopback test (see Troubleshooting) the modem automatically goes back on line when the test is ended. It is not necessary to press G on the keyboard.

H

CASE MODE
HELP MENU

Command Description

Any time the modem is in the CASE mode, pressing H on the keyboard provides you with a complete list of major keyboard commands used to operate the modem.

	Key	Command
When H is pressed a list of major keyboard commands appears on your terminal display.	**$H**	
Dials any telephone number directly from the keyboard.	K	KEYBOARD DIAL
Stores any telephone number (of 60 characters maximum) in any one of ten directory storage registers. The # designates 0 to 9.	S#	STORE #
Automatically dials any one of the sotred numbers by entering the corresponding directory storage designation 0 to 9.	0-9	DIAL
Automatically redials the last telephone number dialed from the keyboard or directory (whether the number was answered or not). The number is dialed once per command.	R	REDIAL
Redials the last number dialed up to 10 times (entry must consist of two digits, 01 through 10).	M##	MULTI-REDIAL

Provides a complete listing of all numbers stored in the directory (0 through 9) but not the last number dialed.	D	DISPLAY #S
Lets you specify six characters that are used to enter the automatic computer logon sequence.	SC	LOGON CHAR
Selects the analog loopback/self-test (if off line) or the remote digital loopback test (if on line).	T	TEST
Clears (erases) all telephone numbers stored in the directory. To prevent accidental erasure, the modem asks you for verification of the command. If yes, you must enter Y. Any other keyboard entry aborts the command and prevents erasure.	C	CLEAR #S
If the programmed disconnect character has been pressed while the modem is on line, this command allows you to go back on line without redialing.	G	GO ON LINE
When this command is entered, the modem displays the status of all the soft options that can be changed by keyboard entry (see Soft Options for complete list).	O	OPTIONS
If the programmed disconnect character has been pressed while the modem is on line, this command lets you terminate the call (go off line).	X	HANG UP

When answering a data call with the telephone, entering this command on the keyboard places the modem in the answer mode.	A	ANSWER
When originating a data call with the telephone, entering this command on the keyboard places the modem in the originate mode.	I	ORIGINATE
Makes the modem exit the CASE interactive mode and enter the idle mode. To wake up the modem again, press the carriage return twice within one second.	Q	QUIT

Special Commands Not Listed In Help Menu

	Key	**Command**
Terminates any dialing operation in progress and message printout.	(any key)	Abort
Sets the autodialer parity to same as the terminal. Use only uppercase characters when entering PARITY.	PARITY	Set parity
Causes modem to return to interactive mode without hanging up when the user-selected key is pressed three times as shown below. Any other sequence negates the command. Normal keyboard entries do not initiate the command.	(User-selected option key)	Programmed disconnect (suspend communications)

- Wait at least 1 second.
- Enter (**key**)(**key**)(**key**) with no more than one second between keystrokes.
- Wait at least 1 second.

Special Characters Used in Conjunction with Dialing Commands

	Key	**Command**
Backspace one character (or hold down Control key and press H key).	Backspace or Control H	Backspace
Allows space between telephone numbers to improve readability. Provides no other function, but is counted as a character in memory storage and limits the length of the stored number that can be dialed.	Space bar	Space
When used with a dialing command, instructs the autodialer to wait for intermediate dial tone before dialing number. Used primarily with PBX systems that use an access number to dial an outside call.	&	Wait for second dial tone
Provides 5-second pause between dialed number and access code number. For delays longer than 5 seconds, multiple % entries can be used.	%	Pause for 5 seconds
When used with Sn command, designates an alternate memory number that is	Ln	Link

automatically dialed if the first number does not answer (n is the directory number of the alternate number 0 through 9 stored in the directory).		
Used during number storage to separate telephone number from alphanumeric text.	/	Add text to stored number
Forces modem to initiate pulse dialing for subsequent digits when used with stored number or keyboard dialing.	P	Pulse dial
Forces modem to initiate tone dialing for subsequent digits when used with stored number or keyboard dialing.	T	Tone dial

I

CASE MODE
INITIATING (ORIGINATING) A DATA CALL MANUALLY

Command Description

Calls can be originated manually with the telephone then transferred to data mode by keykboard entry when operating in the interactive mode.

The modem must be awake ($ prompt is present on display) to manually originate a data call. If the quit-time-out option has been selected, the modem automatically exits the interactive keyboard mode two minutes after last keyboard entry. If it does, press the carriage return twice to reenter in interactive mode.

Example:

Make sure the TR lamp is lighted.	
Press carriage return twice to wake up the modem.	**(cr) (cr)**
Pick up the telephone handset and dial call in normal manner, or dial via the keyboard then pick up the handset.	
Immediately before ending the conversation, request the remote end to enter the data mode first.	
When you get an answer tone, press the letter I on the keyboard. If necessary, press carriage return twice to wake up	**$I**

the modem and obtain $ prompt.	
When the modem responds with the on-line message, data transmission can begin. Replace the handset (hang up).	ON-LINE

Remarks

If the remote end answers automatically, press the letter I upon receipt of answer tone. You must transfer to data mode within 30 seconds after receipt of answer tone or the modem drops the line when the handset is replaced.

K

CASE MODE
KEYBOARD DIALING

Command Description

This command lets you dial any telephone number directly from the keyboard.

(a) Be sure the modem is in the CASE mode.

(b) Press K.

(c) The modem prompts you for the phone number.

(d) Enter the phone number on the keyboard, then press the carriage return.

(e) The modem responds with DIALING (phone number).

	Example 1:
Initiate keyboard dialing.	**$K**
Telephone number you enter. You can insert characters to force the modem to: P - Pulse dial subsequent digits. T - Tone dial subsequent digits. & - Wait for second dial tone. % - Pause 5 seconds before continuing dialing.	NUMBER: **P9& T555 1234 (cr)**
Telephone number modem is dialing.	DIALING: P9& T555 1234

Modem reminds you of the programmed disconnect key used to suspend communications.

END = (user selected key)

After dialing the number, the modem displays the call progress while the speaker monitors the call. After receiving the on-line message, you are connected and ready to log on to the remote computer and transfer data.

Example 2:

Entering L6 after the number causes the modem to link to the telephone number stored in directory register no. 6 if the first number called does not answer.

$K
NUMBER: **P9& T555 1234 L6-(cr)**
DIALING: P9& T555 1234..BUSY..
LINKING
DIALING: P9& 123 4567
END = (User selected key)
ON-LINE

Remarks

Any telephone number up to 60 characters can be entered on the keyboard. Any number dialed on the keyboard can be linked to any one of the stored numbers 0 through 9 by entering the link character and storage register designation as shown in Example 2. The modem automatically inserts a dash after the link number is entered.

Ln

CASE MODE
LINKING STORED NUMBERS

Command Description

Linking makes the modem automatically dial an alternate stored number when the first number dialed does not answer. When storing numbers, linking is done by entering L followed by a number 0 to 9 to designate the linked memory register.

The modem automatically inserts a dash to allow text storage after the link is entered.

Example 1:

This specifies where in the directory you want to store the preferred telephone number.	**$S3**
This is the preferred telephone number. Entering L4 in this number makes the modem dial S4 (OFFICE 2) if S3 (OFFICE 1) does not answer when dialed.	OLD: (blank) NEW: **614 555 1234 L4-OFFICE 1 (cr)**
This is the alternate telephone number that is dialed whenever S3 is dialed and does not answer.	**$S4** OLD: (blank) NEW: **614 555 6789/OFFICE 2 (cr)**

Example 2:

This number is linked to itself. When dialed, it makes the modem	**$S5** OLD: (blank) NEW: **519 555 1234 L5-BANK (cr)**

automatically redial the number up to 10 times if it does not answer.

Remarks

Normally only two telephone numbers are linked, and each is dialed once per command. If additional linking is required, repeat Example 1 for other alternate numbers (e.g., S7 to S8 or S8 to S9). Numbers can also be linked to themselves as shown in Example 2 (S5 to S5) or cross-linked (S7 to S9, S8 to S7) to make the modem automatically redial 10 times.

The linking routine is programmed to stop after ten successive redials regardless of the combination of linking used.

- If a number is linked to itself, the modem tries ten times and stops.
- If two numbers are cross-linked, the modem alternately dials each number five times and stops.
- If each number is linked to the next, the modem tries each number once for a total of ten numbers, then stops.
- After the sequence of ten numbers is complete, manual intervention is required to start over.

M

CASE MODE
MULTIPLE REDIAL

Command Description

The last number dialed can also be redialed up to 10 times (or less if the call is answered). If more than 10 redials are selected the command is ignored. After 10 redials, manual intervention is required to start over. Multiple redial is initiated by pressing M on the keyboard followed by the number of redials desired.

	Example:
Initiate keyboard dialing.	**$K**
Telephone number you enter.	NUMBER: **555 1234 (cr)**
Telephone number modem dials is busy	DIALING: 555 1234...BUSY..ABORT
Redial eight times.	**$M08** DIALING: 555 1234...BUSY..DIALING
Line is busy, dialing again.	DIALING: 555 1234...BUSY..DIALING DIALING: 555 1234...BUSY..DIALING DIALING: 555 1234
Call is answered.	END = (user selected key) ON-LINE

Remarks

The multiple redial entry following M must consist of two digits (01 through 10). To redial only once, enter **M01** or use the **R** command.

O

CASE MODE
OPTIONS SELECTION (SOFT)

This command lets you individually select seven soft options by keyboard entry. The options are described in detail in Table E, and should be selected for your particular system configuration before attempting to dial. These soft options are in addition to the switch-selectable hard options.

Select the options as follows:

(a) Verify modem is in the CASE mode ($ prompt is displayed).

(b) Press the letter O (for options) to display the option table.

(c) Press 1 to select option No. 1, the programmed disconnect option. Before dialing a number, this option should be enabled and the programmed disconnect character designated.

(d) When modem asks DISC(Y/N)?, press Y to enable the programmed disconnect option.

(e) When modem asks END = ?, press any key of your choice. This key is displayed for you each time the modem goes on line, provided the ONLINE MSG (option 9) is also enabled. If no character is entered, the disconnect option is disabled.

(f) Select remaining options 2 through 9 for your system as described below.

(g) To redisplay the option table, press any key (except 0 through 9). To exit the option table, you must press 0 (zero).

Example:

Pressing letter O initially selects the option table. After initial selection, any key can be pressed to redisplay the table. The table can be exited only by pressing 0 (zero).

```
$O
0 - EXIT
1 - DISC          (Y/N)?          -Y
2 - AUTO Q        (Y/N)?          -Y
3 - ECHO          (Y/N)?          -Y
6 - LNGTH         (8/9/10/11)?    -10
7 - BLIND         (Y/N)?          -N
8 - DIAL          (A/T/P)?        -AUTO
9 - ONLINE MSG    (Y/N)?          -Y
```

To change any option, press the corresponding option number 1 through 9 and choose the desired option as described in the chart.

```
#?
```

Remarks

All options selected at the keyboard are retained in memory until changed by keyboard entry. The options are not erased when resetting the modem. However, when operating with an asychronous communications program, the options selected by the program menus might reset the options to those specified in the program. This depends on the program operation.

Table E. CASE Mode Soft Options Chart

Feature	*Selection	Keyboard Entry and Display		
Programmed disconnect	*Yes	#?1 1-DISC END = ? (Press any user-selected key)	(Y/N)	?-Y
	No	#?1 1-DISC	(Y/N)	?-N
Quit time out (automatic quit)	*Yes	#?2 2-AUTO Q	(Y/N)	?-Y
	No	#?2 2-AUTO Q	(Y/N)	?-N
Dialer echo	*Yes	#?3 3-Echo	(Y/N)	?-Y
	No	#?3 3-Echo	(Y/N)	?-N
Character length	11 bit	#?6 6-LNGTH	(8/9/10/11)	?-11
	*10 bit	#?6 6-LNGTH	(8/9/10/11)	?-10
	9 bit	#?6 6-LNGTH	(8/9/10/11)	?-9
	8 bit	#?6 6-LNGTH	(8/9/10/11)	?-8
Blind dialing	Yes	#?7 7-BLIND	(Y/N)	?-Y
	*No	#?7 7-BLIND	(Y/N)	?-N
Tone or pulse dialing	*A	#?8 8-DIAL	(A/T/P)	?-A
	T	#?8 8-DIAL	(A/T/P)	?-T
	P	#?8 8-DIAL	(A/T/P)	?-P

Table E. CASE Mode Soft Options (Cont)			
Feature	***Selection**	**Keyboard Entry and Display**	
On-line message	*Yes	#?9 9-ONLINE MSG (Y/N)	?-Y
	No	#?9 9-ONLINE MSG (Y/N)	?-N
*Default setting			

Option Descriptions

Programmed Disconnect

Yes: Makes modem return to interactive mode without hang ing up. Key code must be pressed three times in succession with no more than a 1-second interval. Other characters must not be sent during 1-second interval before and after the disconnect characters. Any other sequence negates the command. Normal keyboard entry does not initiate command.

No: Modem does not disconnect until data call is terminated.

Quit Time Out (Automatic Quit)

Yes: Modem automatically exits interactive mode 2 minutes after data mode is terminated, or 2 minutes after last keyboard entry if modem does not enter data mode.

No: Modem does not exit interactive mode until instructed to quit (Q).

Dialer Echo

Yes: Characters are echoed back so you can see keyboard entries.

No: Keyboard entries are not echoed. This eliminates the double printout typical of half-duplex terminals.

Character Length

Selects the number of character bits for high-speed asynchronous transmission (8, 9, 10, or 11 bits).

Blind Dialing

Yes: Modem waits 5 seconds for dial tone, then automatically dials even if no dial tone is detected.

No: Modem must detect dial tone before automatically dialing.

Tone or Pulse Dialing

A (Automatic): Modem tone dials first telephone number digit. If dial tone is broken, modem continues to tone dial. If tone dial remains unbroken, modem pulse dials first digit. The procedure is repeated for second dial tone. Feature cannot be used on PBXs that do not break dial tone when transferring outside (e.g., Northern Telecom SL-1). Also, feature should not be used on noisy lines that might cause modem to sense a false dial tone. Use P or T options only or insert a P or T in the telephone number to override this option.

T (Tone dialing): Modem tone dials each telephone number digit.

P (Pulse dialing): Modem pulse dials each telephone number digit.

On-Line Message

Yes: An on-line message is displayed when call is connected.

No: No on-line message displayed.

% (Percent)

CASE MODE
PAUSES IN DIALING

Command Description

The % character provides a five-second pause when inserted in the telephone number sequence. The pause can be used when dialing through telephone systems that require an access code during dialing and slight delay is required between the telephone number and code. If greater delay is required, multiple %s can be used.

	Example 1:
Initiate keyboard dialing.	**$K**
Telephone number and access code.	NUMBER: **123 4567 % 98765 (cr)**
Modem waits five seconds after dialing telephone number before dialing the access code.	DIALING: 123 4567.....% 98765 ON-LINE

	Example 2:
Dialing from directory.	**$1**
Modem waits five seconds before dialing access code.	DIALING: P9& T318 555 1234.....%98765 ON-LINE

Remarks

The % and & characters can be used in various combinations to meet different system requirements. In some cases the % must be used instead of the & to wait for a nonstandard intermediate dial tone. Some experimentation might be required to determine the most effective procedures.

P

CASE MODE
PULSE DIALING

Command Description

Inserting a P in a stored number or keyboard dialing sequence makes the modem initiate pulse dialing for following digits, regardless of the pulse/tone option selection.

	Example 1:
Store a new number in directory.	**$S6**
Old number is blank.	OLD: (blank)
Inserting P in the telephone number makes the modem pulse dial all digits in the telephone number when dialed.	NEW: **P9& 123 4567 (cr)**
	Example 2:
Initiate keyboard dialing.	**$K**
Telephone number you want to dial.	NUMBER: **P9& 123 4567 (cr)**
Modem pulse dials all digits in the telephone number.	DIALING: P9& 123 4567 ON-LINE

Remarks

If a telephone is connected to the modem during pulse dialing, the handset must remain on hook (hung up) until the number is dialed.

PARITY
(Use Uppercase Characters Only)

CASE MODE
PARITY SETTING

Command Description

Each time the 212 Executive II is powered up or connected to a different terminal, the display response from the initial activation command might be garbled. This results from a mismatch between the terminal and modem. The modem is programmed via the keyboard to match the parity of the terminal and to automatically recognize four parity codes:

- EVEN - Parity is even.
- ODD - Parity is odd.
- ONE - No parity, bit 8 = 1 (mark parity)
- ZERO - No parity, bit 8 = 0 (space parity)

If the sign-on message is incorrect in any way, when waking the modem in the CASE mode, enter the word PARITY in uppercase characters on the keyboard. The modem adjusts the parity and displays one of the four responses given above.

	Example:
Modem wakeup command.	**(cr)(cr)**
Garbled sign-on message.	?xx?x = ##x? ?x#% = xx# x = ?#
Enter PARITY.	**PARITY**
The modem response is one of the above.	EVEN $

(Any User Optioned Key)

CASE MODE
PROGRAMMED DISCONNECT

Command Description

The programmed disconnect command is effective only if the modem was in the interactive mode prior to entering the data mode (i.e., if the call was originated by the modem or manually answered, but not during automatic answer).

After the modem goes on line, the programmed disconnect command makes the modem return to the interactive mode without hanging up. This lets you suspend data transfer and execute any modem commands (run tests, reselect options, etc.) then return on line without redialing.

To suspend communications, press the user specified character key three times in succession. The key must not be pressed during a 1-second wait interval before and after the three disconnect keystrokes. Any other sequence negates the command, but normal keyboard entries do not initiate the command. The guard intervals ensure that the command is distinguishable from the normal data entries.

Example:

- Wait at least 1 second.
- Enter **(key)(key)(key)** with no more than 1 second between keystrokes.
- Wait at least 1 second.

$

Remarks

When the option is selected the disconnect character you select is displayed for you each time the modem goes on line as a reminder, provided the On-Line Message option is also enabled. For example:

END = (user selected key)
ON-LINE

After the programmed disconnect command is executed, the modem can be returned on line by pressing G, or the call can be terminated by pressing X.

Q

CASE MODE
QUITTING THE INTERACTIVE MODE (RESET)

Command Description

The interactive mode can be exited in one of the following ways:

- Press Q on the keyboard any time the modem is in the interactive mode (when the $ prompt is displayed).
- The modem automatically resets two minutes after a data call is terminated or after last keyboard entry if the automatic two-minute quit-time-out option is enabled.
- The modem automatically resets when power is first applied or when there is a return from power failure. In this case there is no sign-off message.

Example:

The sign-off message informs you the modem has exited the interactive mode. The modem remains in the selected mode until the hard- option switches are changed.

```
$Q
CASE 212 EXECUTIVE II
     MODEM REV (#)
SIGN OFF
```

Remarks

The modem also exits the interactive mode whenever it goes on line and enters the data mode. After the call is terminated, the modem automatically reenters the interactive mode and remains in that mode unless optioned for a two-minute quite time out or until commanded to quit as described above.

To wake the modem up, press carriage return twice.

R

CASE MODE
REDIAL (ONCE)

Command Description

The last number dialed can be redialed once by pressing R. This command is convenient when calling only one computer center or when dialing directly from the keyboard and the last number dialed is busy.

	Example:
Initiate keyboard dialing.	**$K**
Enter the telephone number.	NUMBER: **123 4567 (cr)**
Telephone number modem dials is busy.	DIALING: 123 4567...BUSY...ABORT
Redial once.	**$R**
Modem redials the last number.	DIALING: 123 4567
Call is answered.	END = (user selected key) ON-LINE

Remarks

To redial the last number dialed up to 10 times, refer to Multiple Redial (M).

Space Bar

CASE MODE
SPACE CHARACTERS

Command Description

The space bar inserts space to improve readability. It provides no other function, but is counted as a character in memory storage and therefore limits the length of the number that can be stored.

	Example:
Store a new number in directory.	**$S2**
This is the old number without spaces.	OLD: P9&T3185551234%9876-BANK
This is the new number with spaces to provide more readability.	NEW: **P9& T318 555 1234 % 9876-BANK**

(Option)

CASE MODE
SPEED CHANGE

In the CASE mode, the modem automatically selects the speed specified by the terminal (1200 bps or 0 to 300 bps). The 300 push-button on the front panel is disabled in this mode. If a speed change is required, it must be performed before the data mode is entered. Change speeds as follows:

	Example:
Press Q to reset the modem, and observe the sign-off message.	**$Q** CASE 212 EXECUTIVE II MODEM REV (#) SIGN-OFF
At the terminal, select the desired speed (1200 bps or 0 to 300 bps).	
Press the carriage return twice within 1 second interval and verify sign-on message displays the selected speed.	**(cr)(cr)** CASE 212 EXECUTIVE II MODEM REV (#) 1200 BPS (or LOW SPEED) H FOR HELP

Command Description

The automatic logon feature lets you program the character codes and sequences required to access a specific computer, eliminating tedious dialing. Refer to Storing Numbers for Autodialing.

Six logon characters are required. The characters can be specified by the user and are selected from Table F. Default values are stored in the modem when shipped.

Table F. CASE Mode Logon Characters

Character Title	Function	Default Keys
Start Logon	The selected character specifies the start of the automatic logon sequence.	[
End Logon	Specifies the end of the logon sequence.	]
Secure On	Designates the start of any codes or character (password, etc.) that must be blanked (secured) on the display.	(
Secure Off	Designates the end of any secured characters.	)
Data Switch	Instructs the dialer to alternate from sending logon characters to receiving (monitoring response from computer) or vice versa.	!
Return Key	This symbol is interpreted as a carriage return for logon sequence only. Other control characters can be used by entering a . to denote that the next character is a control character.	.

NOTE: *The characters shown in the following examples are default values. Any characters can be selected.*

(a) At the keyboard enter **SC** and verify that previous default or assigned logon characters appear on the display:

```
$SC
LOGON CHARACTER ASSIGNMENT
  START LOGON [
  END LOGON   ]
  SECURE ON   {
  SECURE OFF  }
  DATA SWITCH !
  RETURN KEY

ENTER CONTROL CHARACTERS WITH  —
CLEAR (Y/N)Y
```

CAUTION: *Some characters stored under the SC command can make the modem appear to be locked up. This usually occurs when a character is mistakenly stored as a START LOGON command but no END LOGON command has been entered. When lockup occurs:*

- Remove then reapply power to the modem.
- Press (**cr**) twice to wake up the modem.
- Enter **SC.**
- Press the *space bar* to step through the character assignment list until completed. This resets the logon command sequence to the default mode.

(b) To reassign the selected character or use default assignment, press Y. The dialer can now be reprogrammed for logon character selection. For example:

```
CLEAR(Y/N)Y
START LOGON [
```

(c) For new characters, enter your selection and verify the new character displayed is the one you want, or press the space bar to retain the present selection. In either event the next selection is automatically displayed and can be retained or changed in the same manner.

The logon feature can be appended to the number being stored as the last operation performed by the dialer. Linking and text storage (if included in the command) must precede the logon

sequence. For example, a number can be stored without linking or text as long as the logon sequence is the last command of the string input.

Select the directory register number on the keyboard and observe the display:

```
$SO (or 1 to 9)
OLD: xxx xxxx/DIRECTORY TEXT
VERIFY OR STORE (V/S)
```

Press **V** to verify stored number and leave contents unchanged. Press **S** to store a new number string. The dialer responds and the command string can be entered.

```
NEW: xxx xxxx
```

To append the automatic logon sequence, enter the sequence using the previously defined logon characters.

```
NEW: xxx xxxx[^M!USERNAME:!NAME^M!PASSWORD:!CODE^M]
```

The receive field can be abbreviated to maximize the storage space by the last characters of the response. For example:

```
NEW: xxx xxxx[^M!ME:!NAME^M!D:!CODE^M]
```

Be certain the abbreviated statement does not repeat a portion of a previous part of this section of the logon sequence. For example, using only E would result in the logon sequence recognizing USER rather than NAME.

The receive field can be programmed to wait before sending the next message by pressing % to pause for three seconds. For example:

```
NEW: xxx xxxx[^M!%!NAME^M!%!^M]
```

The preceding examples are shown using a Control M that can be substituted for by the preassigned symbol . (period). For example:

```
NEW: xxx xxxx[.!%!NAME.!%CODE.]
```

If portions or all of a new string are to be secured (blanked during display), the symbols can be included as the new command string is being stored. For example:

```
NEW: xxx xxxx[^M!USER-
NAME:!(NAME)^M!PASSWORD:!(CODE)^M]
```

Once logon is appended to a number, the command can only be concluded with the end of logon character and not a carriage return as is the case for normal number storage.

Once the new command string is entered, execute the stored sequence to verify that all fields are programmed correctly. Press 0 to 9 to initiate dialing the new command string.

To secure the string, if secure characters are embedded in the command, select the memory register from the keyboard. The display should be:

```
$SO (or 1 to 9)
OLD: xxx xxxx[^M!USERNAME:!(NAME^M!PASSWORD:!CODE)^ M]
VERIFY OR STORE (V/S)
```

Press **V** if the logon sequence is correct. The dialer now prompts the user to activate the blanking function:

```
SECURE(Y/N)
```

Press **N** for no action, and the memory register remains unchanged. Press **Y** to secure characters within the logon sequence as stored earlier.

```
OLD: *xxx xxxx[^M!USERNAME:!------^M]
```

An asterisk (*) appearing in front of the command string indicates that the secure feature is activated.

Sn

CASE MODE
STORING NUMBERS FOR AUTODIALING

Command Description

The modem stores up to 10 telephone numbers with a maximum of 60 characters each for the number and text description. Zero through 9 are the directory numbers where the phone numbers are stored. If a number is already in the directory, the modem asks if you wish to verify or store a new number. You can also secure the new telephone number using the SC command. Securing the phone number prevents it from being displayed in the directory or when dialed from directory.

	Example 1 (stored number):
Enter S (0–9). This specifies where in the directory you want to store your number.	**$S1**
Modem displays old number, if any.	OLD: xxx xxxx
Modem asks if you want to verify the old number or store a new one. Pressing V stops the operation, pressing S prompts you for a new number.	VERIFY OR STORE (V/S)**S**
Enter the new number. Use the / character to separate the number from text description. Also use the following special characters to select the dialing method and to insert pauses.	NEW: **P9& T318 555 1234 %9876/BANK(cr)**

P - Pulse dial subsequent digits

T - Tone dial subsequent digits

& - Wait for second dial tone

% - Pause 5 seconds before continuing dialing.

Example 2 (secured number):

Store your number in the normal manner, except enclose the number between the secure-on and secure-off characters that can be assigned using the SC command (in this case the default parentheses characters are used).

SS0
OLD: xxx xxxx
VERIFY OR STORE (V/S)**S**
NEW: **(123 4567) (cr)**

Enter the same directory designation again, but this time press V to verify the number. When modem asks if you want to secure the number, press Y and verify that the telephone number is displayed as an asterisk followed by a series of dashes.

$S0
OLD: (123 4567)
VERIFY OR STORE (V/S)**V**
SECURE (Y/N)?**Y**
NEW: *--- ----
$

Remarks

When storing telephone numbers, only digits 0 through 9, touch tone characters * and #, and special characters &, L, %, P and T can be entered as dial-number characters; all other alpha characters (including parentheses) are accepted as spaces. Text

information can be appended to the stored number by entering / character followed by alphanumeric text information.

When the stored number, including special characters, text, and spaces, exceeds 60 characters, omit the spaces to prevent register overflow. The spaces are only used to make the displayed number and text more readable. Stored numbers are retained until changed by keyboard entry.

The / character used when entering text is replaced by a dash whenever the stored number and text are displayed. Do not use a dash to enter text. The dash also replaces the digits in the telephone number when the number is secured.

To display all the stored telephone numbers, press D on the keyboard any time the $ prompt is present.

Use the preceding procedures to store only telephone numbers and text information. If automatic logon is required, refer to Storing Automatic Logon.

0 through 9

CASE MODE
STORED NUMBER DIALING

Command Description

To automatically dial any number from the modem directory, simply press the corresponding directory number:

	Example 1:
Enter the directory number.	**$6**
This is the telephone number stored in register no. 6.	DIALING: 9& 123 4567
Modem reminds you of the programmed disconnect key that is used to suspend communications.	END = (user selected key)
After dialing the specified number, the modem displays the call progress (see Display Dialing Responses for complete list of possible messages). While dialing, the speaker can be used to monitor the call. After receiving the on-line message you are connected and ready to log on to the remote computer and transfer data.	ON-LINE

	Example 2 (Linking):
Enter the directory number.	**S3**
First number dialed is busy.	DIALING: 614 555 1234 L4..BUSY LINKING
Alternate number is busy; call is aborted.	DIALING: 614 555 6789..BUSY..ABORT
	Example 3 (self-linking):
Enter the directory number.	**$5**
Number is busy.	DIALING: 519 555 1234..BUSY LINKING
Same number is busy.	DIALING: 519 555 1234..BUSY LINKING
Modem tries again. Call is answered.	DIALING: 519 555 1234 END = D ON-LINE

Remarks

Refer to Storing Numbers for Autodialing and to Linking Stored Numbers for those procedures.

T

CASE MODE
TONE DIALING

Command Description

When T is inserted in a stored number or keyboard dialing sequence, the modem initiates tone dialing for subsequent digits, regardless of the tone/pulse option selection.

	Example 1:
Store a new number in directory.	**$S2**
Old number is blank.	OLD: (blank)
Inserting T in the telephone number makes the modem tone dial all subsequent digits in the number. The P makes the modem pulse dial the 9 to obtain an outside line on a PBX system.	NEW: **P9& T318 555 6789/HOME (cr)**
	Example 2:
Initiate keyboard dialing.	**$K**
Telephone number you want to dial.	NUMBER: **T123 4567 & 98765 (cr)**
Modem tone dials all digits in the telephone number.	DIALING: T123 4567.....98765

Remarks

You can lift the handset of a telephone connected to the modem before or during automatic tone dialing without disrupting the call.

Don't confuse the special T dialing character with the T test command. The test command initiates loopback tests. The T for tone dial only works when inserted after a keyboard dialing command or a store new number command.

X

CASE MODE
TERMINATING A DATA CALL (HANGING UP)

Command Description

Any data call that was automatically dialed, manually dialed, or manually answered while in the interactive mode can be terminated in one of the following ways:

(a) If the programmed disconnect option has been enabled:

- Wait at least one second.
- Press the programmed disconnect key three times. See Programmed Disconnect.
- Wait at least one second, and verify prompt character $ is displayed.
- Press **X** on the keyboard.

(b) The call is automatically terminated when the modem detects either loss of received carrier for 210 ms or steady space for 1.6 seconds of received data.

(c) If you have not enabled the programmed disconnect option, the call can be terminated as in step b or by disconnecting the telephone line from the TEL LINE connector on the rear panel.

Remarks

When a data call is terminated, the modem automatically returns to the interactive mode and remains in this mode unless optioned for the two-minute quit-time-out, or until commanded to quit. See Quitting the Interactive Mode.

(Option)

CASE MODE
VOICE CALLS USING AUTODIALER AND TELEPHONE

When a telephone is connected to the modem PHONE jack, the modem can be used to automatically dial voice-only calls.

	Example 1:
Initiate keyboard dialing.	**$K**
Dial the number at the keyboard.	NUMBER: **123 4567 (cr)**
When dialing is complete as seen on the terminal display or as heard on the speaker, lift the handset off hook before the remote site answers.	DIALING: 123 4567....
Conduct the remainder of the call in normal manner.	
	Example 2:
Dial the number from the directory.	**$0**
Lift the handset off hook after number is dialed. Conduct the call in the normal manner.	DIALING: 123 4567...

Remarks

Any incoming voice call can be manually answered while in the CASE mode. See Answering a Data Call Manually.

& (Ampersand)

CASE MODE
WAIT FOR SECOND DIAL TONE

Command Description

The & character within a dialing command instructs the modem to wait for an intermediate (second) dial tone before dialing the number. It is used primarily with PBX systems which require an access number to dial an outside call.

Waiting for an intermediate dial tone is similar to waiting for the initial dial tone, except the call is aborted if the intermediate tone is not received within five seconds. The modem does not try again unless the number is redialed. Each period on the display represents a one-second wait interval during dialing.

	Example 1:
Initiate keyboard dialing.	**$K**
Enter the telephone number. Modem dials 9& and waits two seconds before receiving the intermediate dial tone then dials the remainder of the number.	NUMBER: **P9& 123 4567 (cr)** DIALING: P9&..123 456 END = D ON-LINE
	Example 2:
Dial from directory	**$6**
Modem waits five seconds for intermediate dial tone before aborting the call.	DIALING: P9&....DEAD LINE..ABORT $

Remarks

If the PBX generates a nonstandard dial tone, the blind-dial option (soft options, selection 7) can be selected to make the modem begin dialing after five seconds even if the dial tone is not recognized.

OPERATING IN THE AT MODE

When operating the autodialer in the AT mode, the modem is on one of two functional states; local command or on line. In local command, commands are issued directly to the modem from the keyboard. The modem does not execute any command until the carriage return is pressed. When on line, the modem does not respond to any keyboard control; keyboard commands are ignored, except for the escape code. Once on line, the modem can be returned to the command state only when loss of carrier occurs (remote modem hangs up) or the escape code is entered.

AT MODE COMMANDS

See Table G for a list of the AT mode commands. When entering commands in the AT mode, a missing parameter defaults to zero. For example, the E (echo) command can have a parameter of zero to select no echo in command state or a parameter of one to select echo. E alone is the same as E0.

> **NOTE:** *When operating in the AT mode, the "AT" can be entered in either uppercase or lowercase letters, but not mixed (At).*

Individual AT command time delays given in the following command descriptions are default values. These delays and other parameters are user-definable and can be addressed via the S registers. When a default value is given in a command description, reference to the controlling S register number is also given. The complete S register list is given in Table H.

Table G. AT Mode Commands

Keyboard Entry	Command Heading
A/	Reexecute Last Command
ATA	Answer or Originate Manually
ATB0	CCITT Mode at 1200 bps
*ATB1	Bell Mode at 1200 bps
ATC0	Transmit Carrier Off
*ATC1	Transmit Carrier On
ATD	Dialing from Keyboard
ATDsR	Reverse Command
ATDS	Dial Stored Number
ATE0	Do Not Echo Characters in Command State
*ATE1	Echo Characters in Command State
ATF0	Echo Characters in Data Mode
*ATF1	Do Not Echo Characters in Data Mode
AT&F	Restore AT Default Options
*AT&G0	Disable Guard Tone
AT&G1	Transmit 550 Hz Guard Tone
AT&G2	Transmit 1800 Hz Guard Tone
ATH0	Hang Up
ATH1	Go Off Hook before Dialing
ATI0	Display Product Code
ATI1	Display ROM Checksum
ATM0	Speaker Off
*ATM1	Speaker On Until Carrier Received
ATM2	Speaker On for Duration of Call
ATM3	Speaker Off While Dialing, On Until Carrier Received

*Default setting

Table G. AT Mode Commands (Cont)	
Keyboard Entry	**Command Heading**
*AT&M0	Asynchronous Operation after Dialing
AT&M1	Synchronous Operation after Dialing
ATO	Go Back On Line
ATP	Pulse Dial All Telephone Numbers
*ATQ0	Send Result Codes
ATQ1	Quiet (Do Not Send) Result Codes
AT%R	Display All S Registers and Their Content
ATSr?	Read Contents of Register r
ATSr = n	Set Contents of Register r
AT%S	Display Front and Rear Option Switches
AT\S	Display Stored Number, Speed, and Commands
ATT	Tone Dial
ATV0	Digital Result Codes
*ATV1	Verbal Result Codes
AT&W	Save Options in Battery-Backed RAM
*ATX0	Select Basic Result Codes
ATX1	Select Extended Result Codes
ATX2	Dial Tone Required, Busy Not Indicated
ATX3	Dial Tone Not Required, Busy Signal Detect
ATX4	Dial Tone Required, Busy Signal Detect
ATY0	Disable Long Space Disconnect
*ATY1	Enable Long Space Disconnect
ATZ	Resetting the Modem
AT&Zn	Store Telephone Number

Table G. AT Mode Commands (Cont)	
Keyboard Entry	**Command Heading**
,	Pause Before Dialing
;	Return to Command Mode after Dialing
!	Flash
@	Silent Answer
W	Wait for Second Dial Tone
(cr)	Carriage Return
Backspace	Character Delete
Escape	Suspending Communications
Abort	Any Key - Abort Dialing Command
Space	Spacing Characters
Option	Command Sequence
Option	Voice Calls using Autodialer

A/

AT MODE
REEXECUTE LAST COMMAND

Command Description

The last command executed can be reexecuted by using the A/ command. This command is especially helpful when dialing lengthy telephone numbers (outside PBX line, area code, telephone number, access codes, etc.), and the call is not answered. The command requires neither the AT code nor a carriage return.

	Example:
Dial telephone number from keyboard.	**ATD 9, 318 555 1234 (cr)**
Number does not answer or is busy.	NO CARRIER
Reexecute last command.	**A/**
Modem goes on line.	CONNECT

Remarks

The A/ command can only be used if the AT code has not been entered. When the AT code is entered, the command line buffer is cleared, erasing the previous command data.

ATA (cr)

AT MODE
ANSWER OR ORIGINATE MANUALLY

Command Description

A telephone connected to the PHONE jack can be used for normal voice calls or to manually originate or answer data calls. This command is used to transfer a call in progress from the talk mode to the data mode. When using this command the local modem is designated the answering end, the remote modem the originating end. The ATD command must be used at the remote modem to enter the data mode. The procedures can be reversed by mutual agreement so that the local modem is the originating modem and the remote modem the answering. To manually originate or answer a data call follow the example below.

	Example:
Enter this command to disable the automatic answer feature.	**ATS0 = 0 (cr)**
Place call to the remote site, or answer any incoming call using the telephone.	
When voice communications are complete, enter this command to place the local modem in the answer mode. The remote modem must enter **ATD (cr)** to enter the originate mode.	**ATA(cr)**
Hang up. Data communications can begin.	

Remarks

When data transmission is complete, terminate the call as described in Hanging Up.

ATBn(cr)

AT MODE
BELL/CCITT MODE

Command Description

This command lets you select either the Bell 212A standard or the CCITT V.22 recommendation when operating at 1200 bps either synchronously or character asynchronously, depending on the parameter n (n = 0, CCITT; n = 1, Bell). Select the CCITT V.22 mode if you are communicating with a modem that uses that international recommendation.

	Example:
When in the Bell mode and you wish to communicate with a V.22 compatible modem, select the CCITT mode.	**ATB0(cr)**
When in the CCITT mode and you wish to communicate with Bell 212A compatible modems, select the Bell mode.	**ATB1(cr)**

Remarks

Modem defaults to Bell mode (ATB1).

ATCn(cr)

AT MODE
TURN OFF CARRIER

Command Description

The ATC command lets you turn the transmit carrier off (n = 0) or let it function normally (n = 1).

	Example:
Enter this command to turn the carrier off.	**ATC0(cr)**
Enter this command to return to normal carrier function.	**ATC1(cr)**

Remarks

Modem defaults to normal operation (ATC1).

ATD(cr)

AT MODE
DIALING FROM KEYBOARD

Command Description

When this command, followed by the telephone number is entered at the keyboard, the modem automatically originates the call. No telephone is required.

Example:

ATD P9, T123 4567 (cr)

This is the telephone number the modem is to dial. You can insert the following characters to force the modem to:

P — Pulse dial subsequent digits.

T — Tone dial subsequent digits.

, — Pause.

; — Return to command state after dialing.

! — Flash to transfer.

@ — Wait for 5 seconds of silence.

W — Wait for second dial tone.

The modem responds with a result code (if optioned) to indicate call status. If the call is successful, data transmission can begin.

Remarks

Result code enable/disable and code selection are detailed in the ATQ and ATV commands.

The P and T commands are detailed in their alphabetical sequence. The dial modifiers are detailed at the end of the alphabetical listing.

When manually originating or answering data calls with a telephone, entering **ATD(cr)** without a telephone number puts the modem into the originate mode. See Answering Manually or Originating Manually.

ATDsR(cr)

AT MODE
REVERSE MODIFIER (ORIGINATING A CALL IN ANSWER MODE)

Command Description

The Reverse modifier forces the modem to operate in the answer mode. In some instances, the modem can be used to call an originate-only modem. To do this, the modem must be set to answer mode even though it is originating the call by entering the Reverse command at the end of the telephone number sequence. (The s in the command heading stands for the telephone number.) When the call is connected the modem is automatically commanded to answer mode.

	Example:
Enter R at the end of the telephone number sequence if you are calling an originate-only modem.	**ATD 318 555 1234 R (cr)**

ATDS(cr)

AT MODE
DIAL STORED NUMBER

Command Description

The S modifier makes the modem dial the number stored using the AT&Z command.

	Example:
Enter the ATD command with the modifier S added.	**ATDS(cr)**
The modem responds by dialing the number previously stored.	T1,P5551234

Remarks

Don't confuse this command with the ATS command. In this context, the S is used strictly as a modifier to the ATD command.

ATEn(cr)

AT MODE
ECHO CHARACTERS IN COMMAND STATE

Command Description

This command makes the modem echo back all characters or disables the echo when in the command state, depending on the parameter (n) entered with the command. Disabling the echo suppresses the characters and eliminates the printout for full-duplex terminals, or eliminates the double printout characteristic of half-duplex terminals.

	Example 1 (n = 0):
Double printout appears when commands are entered.	AATTDD112233 44556677
Enter this command to suppress the echo (the command entry appears as a double printout).	**ATE0(cr)**
This indicates the command was executed.	OK
Double printout is eliminated.	ATD123 4567
	Example 2 (n = 1):
There is no echo when commands are entered.	(blank entries)
Enter this command to enable the echo (the command does not appear on the display when entered).	**ATE1(cr)**
Command is executed.	OK

Commands are now ATD123 4567
echoed.

Remarks

Modem defaults to echo (ATE1).

The response code (the OK in the examples) is also dependent upon the following commands:

ATQ0 - Send result codes.
ATQ1 - Do not send result codes.
ATV0 - Transmit digital result codes.
ATV1 - Transmit verbal result codes.

The echo can also be enabled or disabled using the ATB command.

ATFn(cr)

AT MODE
ECHO CHARACTERS IN DATA MODE

Command Description

This command makes the modem echo back all characters or disables the echo when in the data mode, depending on the parameter (n) entered with the command. Disabling the echo suppresses the characters and eliminates the printout when operating with full-duplex terminals, or the characteristic double printout when operating with half-duplex terminals.

	Example 1 (n = 0):
Double printout appears when data is transmitted.	AABBCCDDEEFF
Enter the escape code to suspend data communications (refer to Suspending Data Communications).	+ + +
Enter this command to suppress the echo.	**ATF1 (cr)**
Enter this command to go back on line.	**ATO(cr)**
Double printout is eliminated when data is transmitted.	ABCDEF
	Example 2 (n = 1):
There is no echo when data is transmitted.	(blank entries)

Enter the escape code to suspend data communications.	+ + +
Enter this command to enable the echo.	**ATF0(cr)**
Enter this command to go back on line.	**ATO(cr)**
Transmitted data is now displayed.	ABCDEF

Remarks

Modem defaults to no echo (ATF1).

For a detailed description of the escape code guard intervals refer to Suspending Data Communications.

AT&F(cr)

AT MODE
RESTORE AT DEFAULT SETTINGS

Command Description

This command restores selected AT commands to their factory default settings. The commands are shown below:

ATB1	Bell mode at 1200 bps
ATE1	Echo characters in command state
ATM1	Speaker on until carrier received
ATP	Pulse dial telephone numbers
ATQ0	Send result codes
ATT	Tone dial telephone numbers
ATV1	Verbal result codes
ATX0	Basic result codes
ATY0	Disable long space disconnect

Remarks

See ATT and ATP commands for pulse and tone dial modes. Also note that these are the same commands saved by the AT&W command.

AT&G(cr)

AT MODE
ENABLE/DISABLE GUARD TONES

Command Description

This command lets you disable guard tones for domestic calls or select 550 Hz or 1800 Hz guard tones for overseas calls. The commands are:

Enter AT&G0 to disable guard tones.	**AT&G0**
Enter AT&G1 to transmit 550 Hz guard tone.	**AT&G1**
Enter AT&G2 to transmit 1800 Hz guard tone.	**AT&G2**

Remarks

Modem defaults to AT&G0. Guard tones are used only when making overseas calls. Guard tones are not required for calls within the United States.

ATHn(cr)

AT MODE
HANG UP (HOOKSWITCH CONTROL)

Command Description

This command lets you hang up after the escape code is entered and data communications are complete. It also provides you with hookswitch control for special applications.

	Example:
Data communications complete.	
Wait at least 1 second.	
Enter escape code.	+ + +
Wait 1 second for modem to respond.	OK
Enter this command to hang up (go on hook).	**ATH(cr)** or **ATH0(cr)**
This command makes the modem go off hook before dialing.	**ATH1(cr)**

ATIn(cr)

AT MODE
PRODUCT IDENTIFICATION

Command Description

Use the ATIn command to determine the modem product code and ROM checksum.

	Example:
Enter ATI0 to request the product code.	**ATI0(cr)**
These three digits (n represents the third digit) are the 212 Executive II product code.	13n
Enter ATI1 to display the ROM checksum. This is useful only in manufacture.	**ATI1(cr)**

ATMn(cr)

AT MODE
SPEAKER CONTROL

Command Description

This command lets you control when the speaker is on or off. The speaker is helpful when dialing; you can listen for dial tone, carrier, busy signal, etc. to monitor the progress of your call. It can also be left on for the duration of the call, turned off at intermediate steps, or turned completely off.

	Example:
Enter the ATM0 command to turn off the speaker. The speaker is silent until another ATM command is entered or the modem is reset.	**ATM0(cr)**
Enter the ATM1 command to turn on the speaker. This turns the speaker on until carrier is received and the connect result code is displayed.	**ATM1(cr)**
Enter the ATM2 command. This turns the speaker on for the duration of the call.	**ATM2(cr)**
Enter the ATM3 command.	**ATM3(cr)**

This turns the speaker off while dialing, and then on until carrier is received.

Remarks

Modem defaults to ATM1.

AT&Mn(cr)

AT MODE
SYNC/ASYNC MODE SELECTION

Command Description

This command determines the operational mode after dialing. When n = 0, the modem operates asynchronously. When n = 1, the modem operates synchronously.

	Example:
Enter this command to make the modem operate asynchronously after dialing.	**AT&M** or **AT&M0**
Enter this command to make the modem operate synchronously after dialing.	**AT&M1**

Remarks

Modem defaults to ATM0, asynchronous operation.

ATO(cr)

AT MODE
GO BACK ON LINE

Command Description

If the escape code has been executed to suspend data communications, this command lets you place the modem back on line without redialing.

	Example:
Dial any number from keyboard.	**ATD 123 4567 (cr)**
Modem goes on line. Data transmission begins.	CONNECT
Wait at least one second.	
Enter the escape code.	+ + +
Wait at least one second for modem to respond. Any modem command can now be entered.	OK
Modem goes back on line.	**ATO(cr)** CONNECT

Remarks

Refer to Suspending Data Communications for detailed description of the guard intervals required when entering the code. Also refer to Hanging Up.

ATP(cr)

AT MODE
PULSE DIAL ALL TELEPHONE NUMBERS

Command Description

You can force the modem to pulse dial all telephone numbers until you command it to change the dialing mode. Pulse mode is selected by entering ATP alone followed by a carriage return.

	Example:
Select pulse dialing mode. The modem now pulse dials all telephone numbers until the tone dialing mode is selected.	**ATP(cr)** OK
Modem pulse dials this number.	**ATD 123 4567 (cr)** CONNECT
Modem pulse dials this number.	**ATD 555 1234 (cr)** NO CARRIER
Modem tone dials only digits following the T entry.	**ATD 9, T123 4567 (cr)** CONNECT
Modem pulse dials all digits.	**ATD 9, 555 1234 (cr)** NO CARRIER

Remarks

When pulse dialing mode is selected, inserting T in the telephone number sequence makes the modem tone dial only the subsequent digits in that particular sequence. When a new telephone number is entered, the modem reverts to the pulse mode.

ATQn(cr)

AT MODE
QUIET RESULT CODES

Command Description

When using the modem with a receive-only printer, you can use the quiet mode to eliminate the result codes from the transmitted data printout. The result codes can be enabled or inhibited depending on the parameter (n) entered with the command.

	Example:
Enter this command when you want the modem to send result codes.	**ATQ0(cr)** OK
Enter this command when you want to quiet the modem.	**ATQ1(cr)**

Remarks

Modem defaults to ATQ0, send result codes.

AT%R(cr)

AT MODE
DISPLAY S REGISTER CONTENT

Command Description

Enter this command to display all S registers and their contents.

Example:

Enter the AT%R command — **AT%R(cr)**

A typical display is:

REG	DEC	HEX
S00	001	01H
S01	000	00H
S02	043	2BH
S03	013	0DH
S04	010	0AH
S05	008	08H
S06	002	02H
S07	030	1EH
S08	002	02H
S09	006	06H
S10	007	07H
S11	070	46H
S12	050	32H
S13	018	12H
S14	106	6AH
S15	056	38H
S16	000	00H

Remarks

The S-register content is explained under the ATSr = n command, Table H.

ATSr?(cr)

AT MODE
READ S REGISTERS

Command Description

To read the present value of an S register, enter ATSr?(cr), where r is equal to the S register number. The response displayed is the decimal value of the register. More than one register can be interrogated in a single command.

	Example:
Interrogate registers S6 and S7.	**ATS6?S7?(cr)**
Value of register S6.	002
Value of register S7.	005

Remarks

To change the value of an S register use the ATSr = n(cr) command.

ATSr = n(cr)

AT MODE
SELECT AUTOMATIC ANSWER MODE, SET S REGISTERS

Command Description

Modem control and various dialing sequence timing parameters are determined by values assigned to the S registers. The function of each register and their default values are as given in Table H.

The S0 register can be programmed to enable or disable the automatic answer operation. Modem option switch 5 determines the status of register S0 when power is turned off (or when the ATZ reset command is executed). However, when power is on you can override the option switch setting by using this command.

To change the value of the S0 register, use the command ATSr = n(cr), where m equals the register number and n equals the new value for the register.

Example 1 (option switch 5 Up to disable automatic answer):

When power is applied, automatic answer is enabled. Entering this command overrides the switch setting and disables the automatic answer.

ATS0 = 0(cr)

This command resets the modem and defaults to the option switch setting 5 Up, enabling automatic answer.

ATZ(cr)

Example 2 (option switch 5 Down to disable automatic answer):

When power is applied, automatic answer is disabled. Entering this command enables the option.

ATS0 = 1(cr)

The reset command disables the override command, and the option reverts to the switch setting.

ATZ(cr)

Table H. S Registers and Functions

Function	Reg.	Range	Default	Description
Automatic Answer	SO	0-255 rings	*	SO = 0: Auto answer disabled. SO = n: Automatically answers on ring n (up to 255).
	S1	0-255 rings	0	Ring signal counter.
Character Definitions	S2	0-127 ASCII	43	Escape code, user selected.
	S3	0-127 ASCII	13	Carriage return character, user to terminate commands.
	S4	0-127 ASCII	10	Line-feed character sent after (cr), used with verbal result codes.
	S5	0-32, 127 ASCII	8	Backspace character, used to delete errors in commands.

Table H. S Registers and Functions (Cont)				
Function	**Reg.**	**Range**	**Default**	**Description**
Dialing and Answering	S6	2-255 sec	2 sec	Wait for dial tone.
	S7	1-255 sec	30 sec	Wait for carrier. Modem hangs up if carrier not received within wait time.
	S8	0-255 sec	2 sec	Delay inserted by comma in dialing string.
	S9	1-255 sec/10	0.6 sec	Carrier recognition time for modem (10th of seconds increments).
	S10	1-255 sec/10	0.7 sec	Time between loss of carrier and modem hangup (10ths of seconds increments).
	S11	50-255 ms	70 ms	Duration and spacing of dial tones.
Special Functions	S12	20-255 sec	50 sec	Guard time for the three escape code entries.
	S13	N/A	N/A	Bit mapped (UART).
	S14	N/A	N/A	Bit mapped (Options).
	S15	N/A	N/A	Bit mapped (Flags).
	S16	N/A	N/A	Bit mapped (Self-Test).
	S17	N/A	N/A	Bit mapped (Flags).
* Modem defaults to hard option Switch 5 setting.				

AT%S(cr)

AT MODE
DISPLAY FRONT AND REAR OPTION SWITCHES

Command Description

You can display the current settings of the option switches by using the %S command. This is useful when the modem is not visible from the terminal, such as in rack-mount applications.

Example:

Enter the AT%S command — **AT%S(cr)**

A typical display is:

SW4	SW5	SW6	SW8	TKD	300	SYN	TST
0	1	0	1	1	1	1	1

In the example, SW4 means position 4 of the hard option switch on the modem rear panel, SW5 means position 5, and so on. By comparing this display to Table B, Modem Options, we find that the hard option switch settings are: 4 open (or Up), putting the modem in CASE dialer mode; 5 closed (or down), disabling automatic answer; and 6 closed (or down), disabling the dialer (switch 8 is not used). We also find that the TK, 300, SYN, and TST pushbuttons are pressed (0 indicates open, 1 indicates closed).

AT\S(cr)

AT MODE
DISPLAY STORED NUMBER, SPEED, AND COMMANDS

Command Description

This command displays the modem operating speed, the number stored under the AT&Z command, and the commands as shown below.

Example:

Enter the AT\S command

AT\S(cr)

A typical display is:

NUMBER: 5551212
SPEED: 1200

S0 = 1	Auto Answer	M1	Speaker Control
B1	Bell/CCITT	&M0	Sync/Async Mode
C1	Transmitter	Q0	Quiet Mode
T	Dial Mode	V1	Results
E1	Command Echo	X1	Result Codes
F0	Duplex Mode	Y1	Space Disconnect
&G0	Guard Tone		

Remarks

The NUMBER entry is the number stored in dialer memory (AT&Z). The SPEED entry is the modem's current operating speed. The number listed with the command is the command argument. For example, B1 means that the modem is in the Bell mode at 1200 bps. See the individual AT commands for complete interpretations.

ATT(cr)

AT MODE
TONE DIAL ALL TELEPHONE NUMBERS

Command Description

You can force the modem to tone dial all telephone numbers until you command it to change the dialing mode. Tone mode is selected by entering ATT alone followed by the carriage return.

	Example:
Select tone dialing mode. The modem now tone dials all telephone numbers until the pulse dialing mode is select ed.	**ATT(cr)** OK
Modem tone dials this number.	**ATD 123 4567 (cr)** CONNECT
Modem pulse dials only digit 9, tone dials the rest.	**ATD P9, T123 4567 (cr)** CONNECT

Remarks

When tone dialing mode is selected, inserting P in the telephone number sequence makes the modem tone dial only the subsequent digits in that particular sequence. When a new telephone number is entered, the modem reverts to the tone mode.

ATVn(cr)

AT MODE
VERBAL OR DIGITAL RESULT CODES

Command Description

Use this command to select digital (n = 0) or verbal (n = 1) result codes. The verbal result codes are generally used when the modem is connected to a terminal. The digital result codes are used when operating with a computer modem asynchronous communications program. The result codes are shown in the following chart.

Table I. AT Result Codes

Digital Result Codes	Verbal Result Codes	Meaning
0	OK	Command entry successfully executed.
1	CONNECT	Carrier detected.
2	RING–	Local ringing detected.
3	NO CARRIER	Carrier not received from remote modem.
4	ERROR	Error in command line: Invalid command (command not recognized by modem). Command line exceeds command buffer; i.e., greater than the maximum 60 characters. Invalid character format at 1200 bps.
5	CONNECT 1200	1200 bps connection established.
6	NO DIAL TONE	Dial tone not detected.
7	BUSY	Busy signal detected.
8	NO ANSWER	Far-end ringing detected, no answer

	Example:
Enter this command to select digital result codes.	**ATV0(cr)** 0
Enter this command to select verbal result codes.	**ATV1(cr)** OK

Remarks

Modem defaults to ATV1, verbal result codes.

The result codes are also dependent upon the following commands:

ATQ0 - Send result codes.
ATQ1 - Do not send result codes.

AT&W(cr)

AT MODE
SAVE OPTIONS IN PERMANENT MEMORY

Command Description

This command saves the options you have selected in battery-backed RAM. The options saved are:

ATB	Bell/CCITT Mode
ATE	Enable/Disable Character Echo
ATM	Speaker Control
ATP	Pulse Dial
ATQ	Enable/Disable Result Codes
ATT	Tone Dial
ATV	Verbal/Digital Result Codes
ATX	Result Code Sets
ATY	Enable/Disable Long Space Disconnect

ATXn(cr)

AT MODE
RESULT CODES, DIAL TONES, AND BUSY SIGNALS

Command Description

The ATXn command selects the result codes displayed when a call is attemped. The codes are selected by the parameter n.

	Example:
Enter ATX0 command to select basic result codes (0 through 4 in Table I).	**ATX0(cr)**
Modem goes on line. Note that when n = 0, the modem responds like a 300 bps modem.	CONNECT
Enter ATX1 command to select extended result codes (0 through 8 in Table I).	**ATX1(cr)**
Modem goes on line at 1200 bps.	CONNECT 1200
Enter ATX2 followed by the dialing command string.	**ATX2(cr)**
The modem goes off hook and waits up to 5 seconds for 1 second of continuous dial tone. If dial tone is detected, modem dials the number. If not, modem hangs up and no dial tone result code is displayed.	NO DIAL TONE

Enter ATX3 followed by the dialing command string.

ATX3(cr)

The modem goes off hook, waits for 2 seconds (or as set in Register S6), and dials the number without waiting for dial tone (blind dials). If the modem detects a busy signal, the busy result code is displayed. If it connects at 300 or 1200 bps, the appropriate result code is displayed. If neither carrier nor a busy signal are detected within 30 seconds (or as set in Register S7), the modem hangs up and the no carrier result code is displayed.

BUSY

CONNECT 1200

NO CARRIER

Enter ATX4 followed by the dialing command string.

ATX4(cr)

The modem goes off hook and waits for 5 seconds for 1 second of dial tone. If no dial tone is detected, the no dial tone result code is displayed. If dial tone is detected, the modem dials the number. If a busy signal is detected, the modem hangs up and displays the busy result code. If no carrier or busy signal is detected within 30 seconds (or as set in Register S7), the modem hangs up and

NO DIAL TONE

BUSY

displays the no carrier result code. If the connection is successful, the modem displays the appropriate connect result code.	NO CARRIER CONNECT 1200

Remarks

Modem defaults to ATX4.

ATYn(cr)

AT MODE
LONG SPACE DISCONNECT

Command Description

The ATY command disables (Y = 0) or enables (Y = 1) the modem long space disconnect capability. When enabled, the modem goes on-hook if it receives a continuous break signal for 1.6 seconds or more. It also sends a break for 4 seconds before going on hook upon execution the ATH0 command.

	Example:
Disable long space disconnect.	**ATY0(cr)**
Enable long space disconnect.	**ATY1(cr)**

Remarks

Modem defaults to ATY1, enabled.

ATZ(cr)

AT MODE
RESETTING THE MODEM

Command Description

The modem can be reset any time it is in the local command state. The ATZ command resets the software and implements all option settings specified by hard option switches. It also makes the S0 register default to the option switch 5 setting.

Example:

Implement the options specified by the last option switches.	**ATZ(cr)** OK

Remarks

When the modem is on line and the escape code is executed to suspend data communications, you can force the modem to hang up by entering the ATZ command.

When reset by the ATZ command (or upon power up), the modem performs an analog loopback self-test. The MR and CO lamps light. If no errors are detected, the modem beeps. If an error is detected, the CO lamp flashes, and continues to flash until the problem is corrected. Refer to the test procedures and equipment repair at the end of this manual.

AT&Zn(cr)

AT MODE
STORE TELEPHONE NUMBER

Command Description

Use this command to store a telephone number for dialing using the ATS command. The lowercase n in the AT&Z command represents the telephone number and modifiers. Characters that can be used in the telephone number are the digits 0 through 9 for pulse or tone dialing, and A, B, C, D, #, and * for tone dialing. Dial modifiers that can be used are T, P, R, W, comma (,), semicolon (;), exclamation point (!), and commercial at (@).

Example:

Enter AT&Z followed by the dial string.

AT&ZT1,P5551234

In this example, the modem stores the number with instructions to tone dial the access code (1), pause, then pulse dial the calling number (555 1234).

You can store up to 33 characters, including phone digits and modifiers. Spaces can be included for clarity, but are ignored in the character count. Dial strings longer than 33 characters are truncated after the 33rd character.

Comma

AT MODE
PAUSE BEFORE DIALING

Command Description

When dialing through a PBX, you can program the modem to wait for a specified time (see register S8) after dialing the access code for the intermediate dial tone. Multiple commas can be inserted when desired.

	Example:
Dial 9, then pause before dialing telephone number.	**AT D9, 555 1234 (cr)**

Remarks

When operating with a PBX, the P and T commands can also be used to select pulse or tone dialing. This feature is helpful when pulse dialing is required to access an outside line but the PBX system is connected to tone-dial telephone systems. Using P and T in the telephone number sequence reduces the dialing time. For example:

AT D P9, T555 1234 (cr)

Semicolon

AT MODE
RETURN TO COMMAND STATE

Command Description

Entering a semicolon after the telephone number string lets the modem dial the number and return to the command state without hanging up. This command is useful when calling computer sites that require access codes (customer ID, password, etc.) after the call is connected.

	Example:
Dial number and return for command.	**AT D 318 555 1234; (cr)**
Modem executes the command.	OK
Enter ID number and return for command.	**AT D T 12345#;(cr)** OK
Enter password and return for command.	**AT D T 5678#;(cr)** OK
Enter transaction and return for command.	**AT D T 987*34#;(cr)** OK
Hang up.	**ATH(cr)** OK

Remarks

Actual ID and password codes are dependent on the computer site accessed.

! (exclamation point)

AT MODE
FLASH TO TRANSFER

Command Description

This command is the modem's equivalent to "flashing" the hookswitch to transfer a data call to another extension.

Example:

Insert the ! command before the extension number.

ATD!472(cr)

In the example, the modem goes off hook (ATD), then on hook for half a second then off hook (!) to dial the extension (472).

Remarks

This command only works with those phone systems that have the flash-to-transfer feature.

@(commerical at)

AT MODE
WAIT FOR ANSWER

Command Description

The @ command inserted after the calling number instructs the modem to wait for 5 seconds of silence after ringing is detected and then continue the dialing sequence. It is typically used in telephone transactions where a recorded message is given to instruct you to key in ID numbers, select transactions, and the like.

Example:

Include the command after the calling number. **ATDT5551234 @ 56789(cr)**

The modem tone dials the calling number (555-1234). When the call is answered and after any recorded message is given, the modem waits for 5 seconds of silence and then continues the dialing sequence (56789). If the call cannot be completed, the appropriate result code messages are displayed.

If the call is not answered and the wait-for-carrier time is exceeded, the call is terminated. In this case the usual NO CARRIER response is replaced by NO ANSWER.

W

AT MODE
WAIT FOR SECOND DIAL TONE

Command Description

You can force the modem to wait for a second dial tone by inserting a W into the dial string.

Example:

Insert a W into the dial string.	**ATDP9,T1234567W8901234(cr)**

In this example, the modem pulse dials the 9, pauses, then tone dials the first number (1234567). The W makes the modem wait for a second dial tone before dialing the second number (8901234). Dial modifiers can be inserted into the second number as required.

(cr)

AT MODE
CARRIAGE RETURN

Command Description

All command entries (except the reexecute command) must begin with an AT entry and end with a carriage return. The modem does not execute any command in the AT mode until the carriage return is pressed.

	Example 1:
Disable echo in command state.	**ATE0(cr)**
Command was executed by modem.	OK
Select verbal result codes.	**ATV1(cr)** OK
Send result codes.	**ATQ0(cr)** OK
	Example 2:
Telephone number dialed from keyboard, but number was not answered.	**ATD 123 4567 (cr)** NO CARRIER
Reexecute last command.	**A/**
Command was executed.	OK

Backspace

AT MODE
BACKSPACE

Command Description

When entering any command, errors can be corrected using the backspace key if the carriage return has not been pressed. A backspace deletes the last character entered; however, it cannot be used to delete the Attention code (AT).

Example:

Pressing the backspace key deletes the 8 from the telephone number.	**ATD 123 4568 (backspace)** ATD 123 456

(User Defined)

AT MODE
SUSPENDING DATA COMMUNICATIONS (ESCAPE CODE)

Command Description

When on line, the modem can be forced back to the command state without hanging up by entering the escape code three times at the specified guard intervals. This lets you suspend data transfer and execute any modem command (reselect options, duplex mode, etc.) then return on line without redialing.

To suspend communications, press the escape code key (example shows default value; see register S2) three times in succession. The key must not be pressed during a guard interval (see register S12) before and after the three disconnect keystrokes. Any other sequence negates the command, but normal keyboard entries do not initiate the command. The guard intervals ensure that the command is distinguishable from normal data entries.

Example (using default values):

Wait at least 1 second.

Enter + + + with no more than 1 second between keystrokes.

Wait at least 1 second.

OK

Remarks

After the escape code command is executed, the modem can be returned on line by entering the ATO(cr) command, or the call can be hung up by entering the ATH(cr) command.

(Any Key)

AT MODE
ABORT DIALING COMMAND

Command Description

Modem dialing can be aborted by pressing any key on the keyboard.

	Example:
Dial number from keyboard	**ATD 123 4567 (cr)**
Press any key before the call is answered.	**(Any key)** OK

Remarks

After the call is connected, the abort command has no effect (see Hanging Up to terminate the call).

Space Bar

AT MODE
SPACING CHARACTERS

Command Description

Although spaces can be entered in the telephone number sequence to make the display more readable, the spaces are ignored by the modem and are not required. For example:

AT D 318 555 1234 (cr) = ATD3185551234(cr)

(Option)

AT MODE
COMMAND SEQUENCE

When dialing from the keyboard, any command except D can be placed within the dial string. However, the only useful commands are P, T, and R. All other commands should be inserted prior to the dial command, or after it if the dial command is terminated with a semicolon.

Example:

AT E0 Q0 V1 DP9, T555 1234; S0 = 1

This command set causes the modem to:

- E0 - Echo commands.
- Q0 - Send result codes.
- V1 - Send verbal result codes.
- Dp9,T - Pulse dial digit 9 to get outside line. Wait two seconds before tone dialing number.
- ; - End dial command.
- S0 = 1 - Enable automatic answer.

Remarks

Any characters not in the command set are ignored if entered in the dial command. No error message will be generated. This allows punctuation to be entered in the telephone number. For example:

ATDP9, (318) 555 1234 = ATDP9,3185551234

(Option)

AT MODE
VOICE CALLS USING AUTODIALER

When a telephone is connected to the PHONE jack, voice calls can be automatically dialed as shown below:

	Example 1 (using semicolon):
Dial number in the normal manner except enter a semicolon at the end of the number. When ringing is heard on the speaker, pick up the telephone handset.	**ATD 123 4567; (cr)**
Enter Hang Up command on keyboard then conduct the call in a normal manner. If the number does not answer, you must redial the number.	**ATH(cr)** OK
	Example 2 (no semicolon):
Dial number in the normal manner but do not enter a semicolon at end of the number. When ringing is heard on the speaker, pick up the telephone handset, then press any key to abort the dialing.	**ATD 123 4567 (cr)** NO CARRIER
If number does not answer, you can replace the handset and use the A/ command to redial.	**A/** OK

Remarks

In Example 1, the A/ command cannot be used to redial the number since the ATH command was used to hang up. In Example 2, the ATH command was not used.

MANUAL MODE OPERATION (USING A SINGLE-LINE TELEPHONE)

A telephone connected to the rear panel PHONE jack can be can be used with the front-panel controls for normal calls and for manual data call origination and answering. The modem must be hard optioned for the CASE mode or have the dialer disabled.

Press the TK pushbutton to manually originate data calls. After voice communications are complete, release the TK pushbutton to transfer the call to data mode.

When the TK pushbutton is out, the modem automatically answers any incoming call, provided:

- The modem is off line.
- The automatic answer option is enabled (see Table B, Modem Options).
- The Data Terminal Ready signal is on.

To use the telephone for voice-only calls, the TK pushbutton can be left pressed in. This prevents the modem from automatically answering and entering the data mode.

Automatically Answering

The 212 Executive II can automatically answer data calls; a telephone is not required for answer-only operation. To enable the automatic answer:

(a) Set option switch 5 Up (Table B).

(b) Be sure the modem is properly connected to the terminal and telephone lines, and power is applied. If a telephone is connected to the PHONE jack, place the handset on hook.

(c) At the terminal, load the applicable asynchronous communications program, or turn the Data Terminal Ready lead on. This lead can be optioned permanently on. TR lamp should be lighted.

(d) Release the TK pushbutton on the modem front panel. All incoming calls are now automatically answered by the modem.

(e) To inhibit the automatic answer:

- Press in the TK pushbutton to temporarily inhibit the feature.
- Set option switch 5 Down to permanently inhibit the feature.

Manually Answering a Data Call

Data calls can be answered manually with the telephone then transferred to data mode using the TK pushbutton.

When an incoming call is originated by an autodialing modem, the dialing modem might disconnect if answered manually. If so, replace handset and select the automatic answer mode.

To manually answer a data call:

(a) Answer incoming calls by pressing the TK pushbutton and answering in the normal manner.

(b) When requested to enter data mode:

- Release the TK pushbutton to transfer the call to data mode.

(c) Place the handset on hook. Data transmission can now begin.

Manually Originating a Data Call

Data calls can be originated manually with the telephone then transferred to data mode using the TK pushbutton.

(a) At the terminal, turn the Data Terminal Ready lead on and verify that the modem TR lamp lights.

(b) Select the speed using the 300 pushbutton. If you want to operate synchronously, press the SYN pushbutton and release the 300 pushbutton.

(c) Press TK pushbutton, then lift the telephone handset off hook and dial the call in a normal manner. If remote site answers manually, go to step d; if remote site answers automatically, go to step e.

(d) After voice communications are complete, request the remote site to enter the data mode first. This procedure depends on the type of modem at the remote site.

(e) When you get an answer tone, release the TK pushbutton to enter the data mode. You must transfer to data mode within 15 seconds after the answer tone begins or the modem drops the line.

(f) Replace handset. Data transmission can now begin.

Terminating a Data Call (Hanging Up)

After the data transmission is complete, manually originated or manually answered data calls can be terminated in one of the following ways:

- Press the TK pushbutton in. The operator at the remote site can use a manual disconnect procedure to ensure the call is terminated depending on the particular type of modem at the remote site.

- The call can be terminated when the Data Terminal Ready leads are turned off at both sites (TR lamp is out).

- The call is terminated automatically when the modem detects:

(a) Loss of received carrier for 700 ms.

(b) Steady space for 1.6 seconds of received data.

(c) Data Terminal Ready lead off for 50 ms or longer.

Voice-Only Calls

Calls can be originated any time the line is clear. Incoming calls might be answered automatically (depending on option setting) unless the TK pushbutton is pressed. To use the telephone for voice-only calls:

(a) Press the TK pushbutton.

(b) Dial the call, or answer any incoming calls in normal manner.

Voice-only calls can also be made using the autodialer in the CASE or AT mode.

Asynchronous/Synchronous Mode Selection

In the synchronous mode, the modem supplies the terminal with a 1200 bps clock signal to synchronize data. (The clock is not required in the asynchronous mode.) The synchronous mode must be 1200 bps: the modem operates asynchronously only at 0 to 300 bps.

- To select the synchronous mode, press the SYN pushbutton in, then release the 300 pushbutton.
- To select the asynchronous mode, release the SYN pushbutton, then select the speed as required.

Changing Speed

Speed selection is determined by the position of the 300 pushbutton at the originating modem; the remote modem automatically adjusts to the speed of any compatible originating modem. The speed must be selected before entering the data mode and cannot be changed once data mode is entered. If a speed change is required, both the originating and answering modems must leave the data mode, change speed, then reenter the data mode at the new speed.

- To select 0 to 300 bps, press the 300 pushbutton.
- To select 1200 bps, release the 300 pushbutton.

COMPUTER DIALING

Modem Wakeup

The 212 Executive II can also be used to allow a computer to originate and answer calls. Before the modem can process any computer commands, the computer must wake up the modem as follows:

CASE mode: The computer must send two carriage returns and wait for the sign-on message.

(cr)(cr)

CASE 212 EXECUTIVE II MODEM REV (#)

1200 BPS

H FOR HELP

$

NOTE: *If the batch command character < is sent within 200 milliseconds after the last carriage return, the modem enters the batch mode immediately and the sign-on message is not sent (see Computer Batch Command which follows).*

AT mode: The computer must prefix each command (except the reexecute command A/) with letters AT. The modem does not execute any AT commands until a carriage return is sent.

AT Mode Computer Command Sequence

When operating in the AT mode with a computer, any number of commands can be sent as long as the total number of characters per command set does not exceed 40.

Any command except D can be placed within the telephone number sequence; however, the only useful commands are P, T, and R. All other commands should be inserted prior to the dial command, or after the dial command if it is terminated with a semicolon.

Example:

This command sequence causes the modem to:

AT E0 Q0 V1 DP9, T555 1234; S0 = 1(cr)

E0 - Echo commands.
Q0 - Send result codes.
V1 - Send verbal result codes.
DP9,T - Pulse dial digit 9 to get outside line. Wait two seconds before tone dialing number.
; - End dial command
S0 = 1 - Enable automatic answer.

Any character not in the command set is ignored if entered in the dial command. This allows punctuation to be entered in the telephone number. No error message will be generated. For example:

ATDP9, (318) 555 1234 = ATDP9,3185551234

CASE Mode Computer Batch Command

The modem batch command allows full-speed input of dialing information from a computer or buffered terminal. By enclosing a string of commands in angular brackets (< and >), the modem suspends processing and buffers the commands. This allows a computer to transmit characters at full speed (with no gaps between characters). For example:

$<S15551234cr> (if no number exists in directory No. 1)
$<S1S5551234cr> (if a number exists in directory No. 1)

Upon receipt of the < character, the modem executes the commands; however, all command processing is aborted if the computer sends any character during command execution.

The modem does not echo the batch command characters but does respond with $ prompt and digital result codes to indicate the results of each command as executed.

Response Code	Command Result
1	Error occured in batch command
2	Not used
3	No dial tone/dead line
4	Dead line after placing call
5	Line busy
6	Ringing, no answer
7	On line
$	Command executed without error and ready for next command.

All response codes are followed by a carriage return. The $ prompt is sent only at the end of the batch command, but all other result codes can be sent multiple times depending on the commands in the batch string. An error in the batch string does not terminate the batch command, but the command in error is not executed. All other commands remaining in the batch string are executed.

Any number of commands can be included between the angular brackets as long as the total number of characters does not exceed 60.

Examples:

This command sets options 1, 2, and 7, then stores a telephone number in directory register No. 1, and finally dials the number from directory.

$<01YD2N7Y0S1SP9&T5551234cr1>

This command sets options then dials the telephone number directly from the batch buffer.

$<01YD2N7Y0KP9&T5551234cr>

The Clear Stored Numbers command (C) and Confirmation (Y) must be sent as a separate batch command or as the last command in the batch string, since it also clears the batch command buffer of all characters that follow it.

	Examples:
Clear command is sent as a separate command.	**$<CY>**
Options 1, 2, and 7 are set and the clear command erases the stored number directory and the batch command buffer.	**$<01YD2N7Y0CY>**

TROUBLESHOOTING

SELF-DIAGNOSTICS

There are four self-diagnostic tests:

- Manual mode local self-test (ST)
- Manual mode remote digital loopback test (RDL)
- CASE mode analog loopback test (AL)
- CASE mode remote digital loopback test (RDL)

A manual mode system checkout procedure is provided in Figure 5, the manual test procedures are given in Tables J and K. A checkout procedure is given in Figure 6 for CASE mode, and the corresponding test procedures listed in Tables L and M. A description of each test is given in the following paragraphs.

Manual Mode Local Self-Test

The local self-test can be performed in manual mode any time the modem is not on line. The test provides an independent check of the modem transmitter and receiver by isolating the modem from the telephone lines. The modem then transmits an internally generated test pattern that is looped through the transmitter and back to the receiver. Lighting or flashing of the RD lamp indicates the modem has failed the test. The test can be performed in the high- or low-speed asynchronous mode. If the high-speed mode is selected, the test can also be performed in the synchronous mode by pressing the SYN pushbutton. To perform the test refer to Table J.

Manual Mode Remote Digital Loopback Test

This test can be performed in manual mode any time the modem is on line. This makes the remote modem enter the high-speed digital loopback mode. You can then test the complete data transmission system including the local modem, telephone lines, and an unattended remote station. In this test, data you enter on the keyboard is transmitted to the remote site where it is looped back to your modem. Check for errors by comparing the transmitted characters with the received characters on the terminal display. The test can only be performed in the high-speed data mode, in either the asynchronous or synchronous mode. Refer to Table K for test procedures.

Analog Loopback Self-Test

The analog loopback test can be performed only when the modem is in the CASE or AT interactive mode (not on line). This test isolates the modem from the telephone line and loops an attenuated transmit signal back through the receiver to the terminal. By comparing the characters entered on the keyboard with those displayed on the terminal, you can determine if the local modem, terminal, and RS-232-C interface are functioning properly. The test can be performed in high- or low-speed mode as selected at the terminal before entering the interactive mode. To perform the test refer to Table L.

Remote Digital Loopback Test

This test can only be performed when the modem has been commanded to return to the interactive mode by executing the programmed disconnect command and then pressing T. This makes the remote modem enter the high-speed digital loopback mode. This lets you test the complete data transmission system including the local modem, telephone lines, and an unattended remote station. The test can only be performed in high-speed asynchronous mode as selected on the terminal. Refer to Table M for test procedures.

PRETEST CHECKS

Before starting any test, check the status of the modem as follows:

(a) Modem is correctly connected to terminal and telephone lines. For manual mode, the telephone must also be connected to the modem PHONE jack to permit manual dialing.

(b) Power is applied to the terminal and modem.

(c) All other hard and soft options have been properly selected for your system.

(d) If you are performing the tests in the CASE mode, be sure the prompt is displayed on the terminal before starting the test. If the prompt is not present, press the carriage return twice to wake up the modem.

- Press carriage return twice and check for prompt.

- Check option switches again.

If the prompt still cannot be obtained:

- Make sure the SD lamp flashes while pressing the carriage return several times. A flashing SD lamp indicates that keyboard commands are being received by the modem. If it does not flash, the terminal keyboard or interface is most likely faulty.

- Observe the RD lamp while pressing carriage return. A flashing RD lamp indicates the modem is responding to the keyboard command. In this case the terminal display or interface cable is probably faulty. If it does not flash, the modem is faulty (not responding to command inputs).

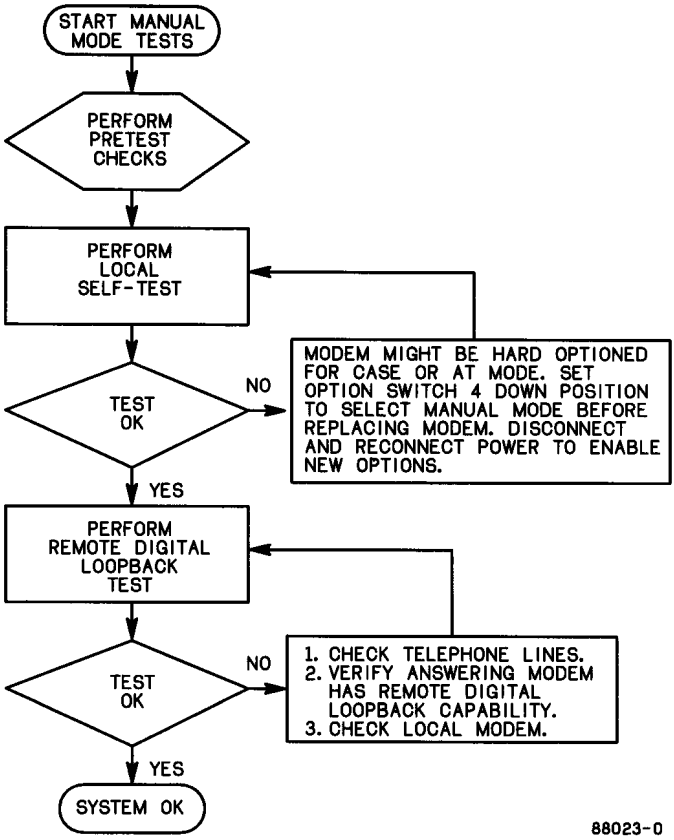
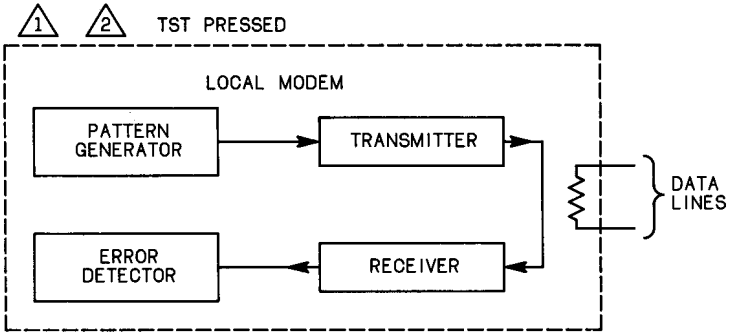


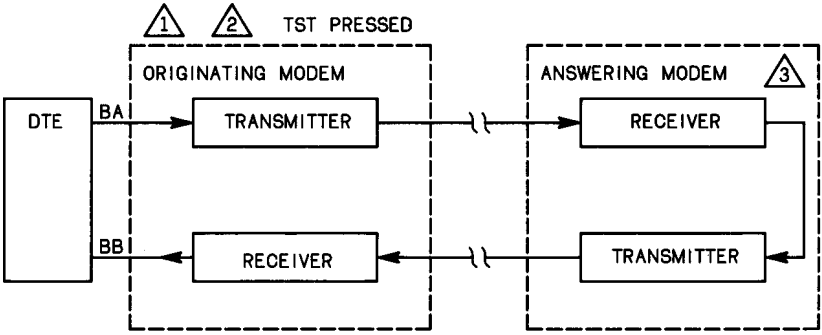
Figure 5. Manual Mode System Checkout Diagram

Table J. Manual Mode Local Self-Test



Action	Result
1. Make sure modem is not in autodial mode or on line. If modem is on line, terminate the call in normal manner (see Hanging Up in Manual Mode).	CO lamp is out. MR lamp is lighted if optioned permanently on. Ignore TR lamp.
2. Press 300 pushbutton to select low-speed operation.	
3. Press the TST pushbutton to start the test.	Test pattern is automatically looped back and checked for errors.
4. Observe the RD lamp for one minute.	If RD lamp lights or flashes after the CO lamp lights, the modem has failed low-speed test.
5. Release the 300 pushbutton to select high-speed operation. If you want to run test in synchronous mode, also press SYN pushbutton.	
6. Observe the RD lamp for one minute.	If RD lamp lights or flashes after the CO lamp lights, the modem has failed test.
7. Release TST pushbutton to end the test. Reselect speed and mode as applicable to your system.	Modem goes to idle mode.

Table K. Manual Mode Remote Digital Loopback Test



1 TEST CAN BE PERFORMED ONLY IN MANUAL MODE AND WHEN MODEM IS ON LINE.

2 TEST CAN BE PERFORMED AT HIGH-SPEED SYNCHRONOUS OR ASYNCHRONOUS ONLY.

3 ANSWERING MODEM CAN ANSWER AUTOMATICALLY WHEN PROPERLY OPTIONED. REMOTE DTE STAYS ON LINE IN RECEIVE ONLY MODE.

84028-0

Action	Result
1. Release 300 pushbutton to select high-speed mode. **NOTE:** *To run the test in synchronous mode, press SYN pushbutton.*	CO lamp is out.
2. At the terminal, turn the Data Terminal Ready lead on.	TR lamp lights.
3. Using the telephone, dial call to the remote site and enter data mode in normal manner (see Manually Originating a Data Call in Manual Mode).	MR and CO lamps light.
4. Press TST pushbutton to start the test.	Remote answering modem automatically enters digital loopback mode.

Table K. Manual Mode Remote Digital Loopback Test (Cont)	
Action	**Result**
5. At the keyboard, press any number of keys and verify the corresponding characters appear on the display.	Display at the originating terminal shows all keys pressed. If any character is incorrect, the remote modem or telephone lines are most likely at fault. During test, all characters entered on the local keyboard are displayed on the remote terminal.
6. Observe the front-panel status lamps while entering data.	SD lamp lights when Transmitted Data signal is spacing. RD lamp lights when Received Data signal is spacing.
7. When test is complete, release TST pushbutton.	Modem returns to on-line data mode. Normal data transmission can begin.
8. To hang up, press the TK pushbutton.	Modem returns to idle mode.

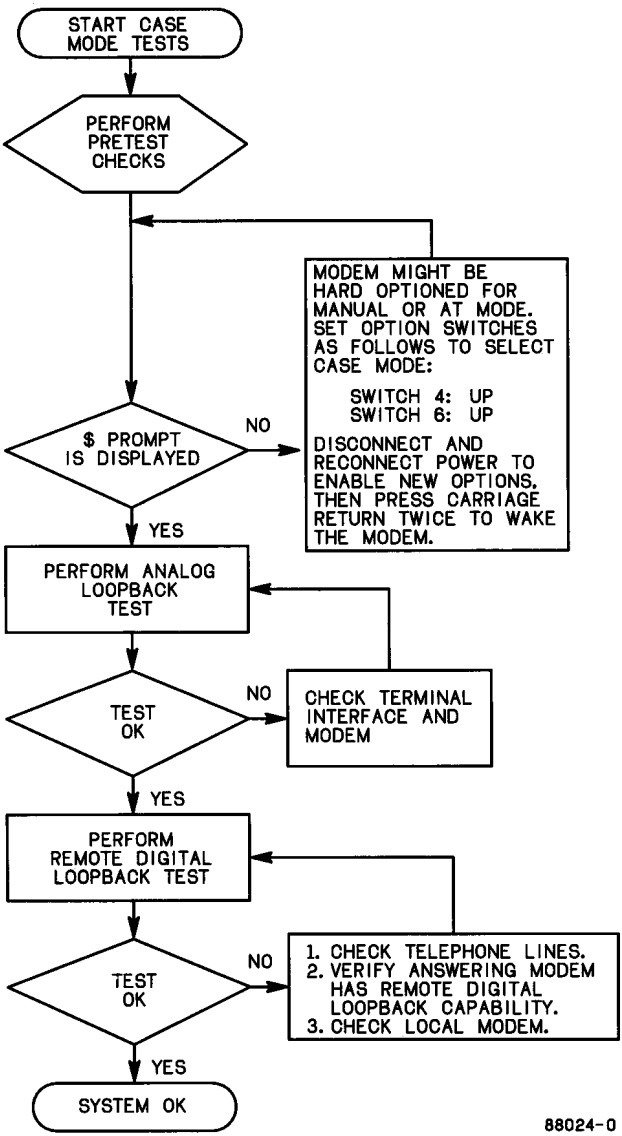
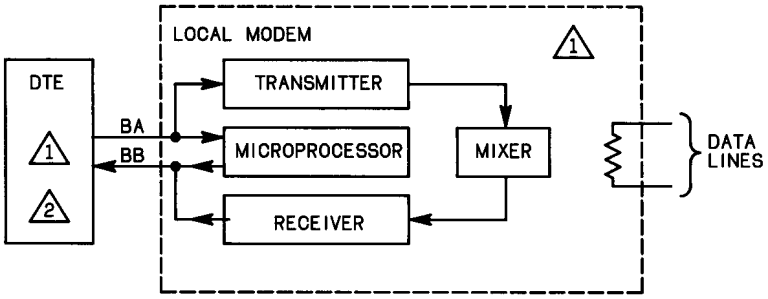


Figure 6. Autodial System Checkout Diagram

Table L. Autodial Mode Analog Loopback Self-Test



1 TEST CAN BE PERFORMED ONLY IN CASE INTERACTIVE MODE AND WHEN MODEM IS OFF LINE.

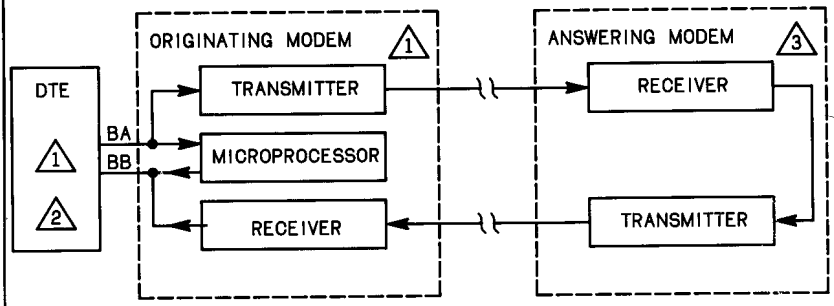
2 TEST CAN BE PERFORMED IN ASYNCHRONOUS HIGH- OR LOW-SPEED MODE.

84030-2

Action	Result
1. Make sure modem is not on line. If modem is on line, terminate the call in the normal manner (see Hanging Up in CASE mode).	Modem $ prompt appears on the dis play. TR lamp lights and CO lamp goes out. MR lamp lights if optioned permanently on.
2. Press **T** on the keyboard.	Modem responds with the following display: **$T** AL TEST END = D **NOTE:** *Do not press D until ready to terminate this test. If D is inadvertently entered, press T again to restart test.*

Table L. Autodial Mode Analog Loopback Self-Test (Cont)	
Action	**Result**
3. At the keyboard, press any number of keys except D and verify the corresponding characters appear on the display.	Display accurately shows all keys activated. If any character is incorrect, modem has failed the test.
4. Observe the front-panel status lamps while entering data.	SD lamp lights when Transmitted Data signal is spacing. RD lamp lights when Received Data signal is spacing.
5. When test is complete, press **D** on the keyboard. Any CASE keyboard commands can now be entered.	Modem responds with: END AL TEST $

Table M. Autodial Mode Remote Digital Loopback Test



1 TEST CAN BE PERFORMED ONLY IN CASE INTERACTIVE MODE AND WHEN MODEM IS ON LINE.

2 TEST CAN BE PERFORMED AT HIGH-SPEED ASYNCHRONOUS MODE ONLY.

3 ANSWERING MODEM CAN ANSWER AUTOMATICALLY WHEN PROPERLY OPTIONED. REMOTE DTE STAYS ON LINE IN RECEIVE ONLY MODE.

84031-2

Action	Result
1. Enable the Programmed Disconnect option and specify the disconnect character (see Options Selection, Soft in CASE mode). Make sure the modem is in high-speed mode, then dial call and enter data mode in normal manner (automatic or manual dial).	TR, MR, and CO lamps are lighted. Modem responds with following message if on-line message option is enabled: END = {User specified disconnect character} ON-LINE
2. At the keyboard, press user specified key three times to execute the programmed disconnect. This returns the modem to the interactive mode (see Programmed Disconnect).	Modem $ prompt appears on display indicating that the modem is back in the interactive mode (but still on line).

Table M. Autodial Modem Remote Digital Loopback Test (Cont)

Action	Result
3. Press **T** on the keyboard to start the test. This commands the remote modem to the digital loopback mode.	Modem responds with: **$T** RDL TEST END = D **NOTE:** *Do not press D until ready to terminate this test. If D is inadvertently pressed, press the Programmed Disconnect character key three times, then press T and start again.*
4. At the keyboard, press any number of keys except D and verify the corresponding characters appear on the display.	Display at the originating terminal shows all keys pressed. If any character is incorrect, the remote modem or telephone lines are most likely at fault. During test all characters entered on the keyboard are also displayed on the remote terminal.
5. Observe the front-panel status lamps while entering data.	SD lamp lights when Transmitted Data signal is spacing. RD lamp lights when Received Data signal is spacing.
6. When test is complete, press **D** on the keyboard to terminate the test. If desired, normal data transmission can begin.	Modem returns to on line data mode. Display shows: END RDL TEST
7. To hang up, press Programmed Disconnect character three times. When $ prompt appears, press **X** on the keyboard.	Modem goes off line and returns to interactive mode, as shown by display. **$X** OFF-LINE $

INTERFACE DESCRIPTIONS

Tables N through P provide a description of the signals on the DTE, TEL LINE, and PHONE interface connectors.

Table N. DTE Interface Connector Signals

Pin No.	EIA RS-232-C Mnemonic/Name	CCITT Number/Name
2	BA Transmitted Data	103 Transmitted Data
3	BB Received Data	103 Received Data
5	CB Clear to Send	106 Ready for Sending
6	CC Data Set Ready	107 Data Set Ready
7	AB Signal Ground	102 Signal Ground
8	CF Received Line Signal Detector	109 Data Channel Received Line Signal Detector
9	+ P (Voltage test point)	
10	-P (Voltage test point)	
12	CI Data Signal Rate Selector (DCE Source)	112 Data Signalling Rate Selector (DCE)
15	DB Transmission Signal Element Timing (DCE Source)	114 Transmitter Signal Element Timing (DCE)
17	DD Receiver Signal Element Timing (DCE Source)	115 Receiver Signal Element Timing (DCE)
20	CD Data Terminal Ready	108/2 Data Terminal Ready
22	CE Ring Indicator	125 Calling Indicator

NOTE: Unused pins are not shown.

Control, clock, and indicator signals: ON = + 3 to + 25V
OFF + -3 to -25V

Data signals: Binary 0 = space = + 3 to + 25V
Binary 1 = mark = -3 to -25V

Table O. TEL LINE Interface Connector Signals		
Connector Pin No.	**Desig.**	**Description**
1	D1	Contact closure between D1 and ground places modem in originate mode. Used with certain customer-provided calling equipment.
2	A	Contact closure between A and A1 leads indicate modem is in data mode or telephone is in use. Used for certain key telephone applications.
3	T	Telephone line tip lead. Data and voice signals are transmitted and received through tip and ring. The ringing signal detector is also connected across tip and ring.
4	R	Telephone line ring lead.
5	A1	See pin 2.
6	—	Ground.

Table P. PHONE Interface Connector Signals		
Connector Pin No.	**Desig.**	**Description**
1	—	Not used.
2	A	Contact closure between A and A1 leads indicate modem is in data mode or telephone is in use. Used for certain key telephone applications.
3	R	Telephone line ring lead. Data and voice signals are transmitted and received through tip and ring. The ringing signal detector is also connected across tip and ring.
4	T	Telephone line tip lead.
5	A1	See pin 2.
6	—	Not used.

ACCESSORIES

Table Q lists the accessories available for the Executive II. Kit descriptions and conversion instructions follow.

Table Q. Modem Accessories

Description	Part Number
RM70 rack mountable card cage	905-5098-001
Card modem to desk modem conversion kit	905-5216-003
Desk modem to card modem conversion kit	905-5216-004
Six position, six conductor telephone cord required for use with D-lead applications	115-0414-008

Desk Modem to Card Modem Conversion

Use the following procedure to disassemble the desk modem for card modem conversion.

1. Disconnect power transformer at power outlet. Disconnect the DTE, telephone, and telephone line cables.

2. Insert a coin or another suitable device into each of the four slots and twist to separate the top cover from the bottom of the enclosure. Lift off top cover.

   CAUTION: *This equipment contains components that are sensitive to electrostatic discharge. Handle printed circuit cards and card sets only at approved electrostatic discharge work stations.*

3. Remove the two screws at diagonal corners of the modem card securing the modem to the enclosure bottom. Gently pry the other two corners off the plastic pins holding them in place.

4. Lift the modem card from the enclosure. The front and rear panels are not secured and fall away.

5. The modem card is now ready for card modem kit installation. Store the enclosure halves, the front and rear panels, and mounting screws for possible future use.

The desk modem to card modem conversion kit, part number 905-5215-006, contains the modem mounting plate with transformer, mounting hardware, and an identification label. Use the following procedures to prepare the modem card for rack mounting:

1. Set the card on the plate standoffs with the pushbuttons and volume control shaft protruding through the holes in the plate front panel. Secure the modem card to the plate using the four screws provided with the kit.

2. Insert the power plug from the transformer mounted on the plate into the modem card power connector. The four-prong keyed ac plug connects to the RM70 power supply pigtail.

3. Turn the modem over and affix the card modem label to the underside of the plate.

The modem is now ready to mount in a CASE RM70 Rack Mountable Card Cage. Refer to RM70 Installation and Operation Instructions, Publication 918-5262, for installation details.

Card Modem to Desk Modem Conversion

The card modem to desk modem conversion kit, part number 905-5216-005, contains the top and bottom plastic enclosure clamshells, a front panel, a rear panel, a transformer with captured cord, and mounting hardware. Use the following procedure to convert a card modem to a desk modem:

1. Remove the card modem from the RM70 following the procedures given in the RM70 Installation and Operation Instructions, Publication 918-5262.

2. Disconnect the power plug from the transformer on the mounting plate from the modem card power connector.

3. Remove the four screws holding the card to the mounting plate. Retain plate and mounting screws for possible future use. Set the modem card on an approved nonconductive surface.

4. Locate the plastic enclosure bottom. It's the one with the rubber feet on it.

5. Set the supplied front panel into the slots at either end on the enclosure bottom.

6. Pick up the modem card and insert the pushbuttons and volume control shaft into their front panel cutouts. Align the holes on the corners of the card over the + shaped studs on the standoffs.

7. Lift the rear of the modem card and slip the supplied rear panel over the DTE, PHONE, and TEL LINE connector. Align the rear panel with the slot on the rear of the enclosure bottom, and set the modem card down onto the standoffs. Press down until the + shaped studs engage the holes at diagonal ends of the modem card.

8. Secure the card to the enclosure bottom by threading the two supplied screws through the holes at the two remaining diagonal ends of the card and into the standoffs.

9. Align the top cover slots over the front and rear panels. Press the bottom and top enclosure together until they are securely mated.

10. Affix the supplied identification label to the bottom of the modem. Connect the supplied power transformer, and the DTE, PHONE, and TEL LINE cables as shown in Figure 2 of this manual. The modem is now ready for use.

SPECIFICATIONS

Item	Specifications
FCC registration	This equipment is designed in accordance with FCC Part 68 specifications and is verified Class B (commercial and residential compliance) under FCC Part 15, Subpart J.
FCC registration number	AE798A-13524-MD-E
Ringer equivalence	Without phone: 0.5B
DOC certification number	Pending
Operating modes (selected by hard option switches)	CASE interactive keyboard mode, Attention (AT) interactive keyboard mode, and manual (front-panel) mode.
Dial pulse rate	10 + 5 pps
Dial tone frequency detect	200 to 800 Hz
Battery support	Minimum 2-year battery life. Battery is connected only when power is interrupted.
Automatic answer	In or out (selectable)
Input data format	Serial binary
Data mode operation	Full duplex over two-wire DDD switched network.
Transmission speed	Low speed: 0 to 300 bps asynchronous. High speed: 1200 bps character asynchronous (8, 9, 10, or 11 bit option), or 1200 bps synchronous in manual mode only.
Modulation	Low speed: Frequency Shift Keyed (FSK) High speed: Differential Phase Shift Keyed (PSK).
Transmit carrier frequencies: Low speed	Originate: 1270 Hz mark; 1070 Hz space. Answer: 2225 Hz mark; 2025 Hz space.
High speed	Originate: 1200 Hz Answer: 2400 Hz
Transmit signal level	-9 dBm permissive

SPECIFICATIONS (Cont)

Item	Specifications (Cont)
Receiver signal level range	-10 to -45 dBm
Abort timer	18 seconds
Quiet timer	2 seconds
Send space disconnect timer	3.9 seconds
Respond to received space disconnect	1.6 seconds
Power requirements	
Desk modem	105 to 132 Vac, 57 to 63 Hz, single phase, 7W (supplied at the 2-prong wall-mounted transformer). Stepdown to 10 Vac.
Card modem	24 Vac, 57 to 63 Hz, single phase, 7W (supplied by RM70 card cage). Stepdown to 10 Vac by transformer mounted for modem bracket.
Operating temperature	32°F to 104°F (0° to 40°C).
Terminal interface	In accordance with EIA RS-232-C except pin 12 (25-pin female connector).
Telephone line interface	Six-position modular jack for permissive application.
Telephone interface	Six-position modular jack.
Rack mount connections	Request RM70 Publication 5261
Dimensions:	
Desk modem	1.5" (H) x 6.3" (W) x 9.7" (D) (38 mm x 160 mm x246 mm)
Card modem	1.6" (W) x 5.6" (H) x 11.2" (D) (41 mm x 142 mm x 284 mm)
Weight:	
Desk modem	Net, 2.1 lb (1 kg) Shipping, 2.7 lb (1.2 kg)
Card modem	Net, 0.8 lb (0.4 kg) Shipping, 1.0 lb (0.5 kg)

GLOSSARY

Answer Designates the modem procedure for responding to a data call. A full-duplex answering modem transmits at a different frequency than the originating modem.

Asynchronous Not synchronous. Binary serial data that can be transmitted without an accompanying clock signal of the same frequency.

Autodialer Microprocessor circuitry included in the modem that allows dialing telephone numbers from modem memory or direct dialed on the keyboard without the use of a telephone.

bps Bits per second. The rate that data is transmitted (e.g., 1200 bps).

Buffer Provides temporary data storage in computers and data communications equipment.

Bus Multiple signal lines normally used to route parallel data to and from computer memory.

CCITT Consultative Committee International Telegraph and Telephone. An international consultative body for setting international communications standards.

CD Carrier Detector. Modem turns this lead on to indicate carrier signal has been received from remote modem. Note: Do not confuse this signal with the Data Terminal Ready lead on the RS-232-C interface designated CD.

CTS Clear to Send. A control signal from the modem to indicate that the modem is ready to accept data from the computer.

DCE Data Communications Equipment. The hardware (such as modems) that connects DTE to the transmission facility.

Dead Line A telephone line that does not provide dial tone, ringing, or busy indication that can be detected by the modem. Autodialed calls that are answered manually by the remote site are also processed as dead line (i.e., the modem aborts the call).

GLOSSARY

DOC Department of Communications. The Canadian body that functions similiarly to the FCC in the U.S.

DOS Disk Operating System.

DSR Data Set Ready. A control signal from the modem to indicate that the modem is in data mode and connected to the telephone line.

DTE Data Terminal Equipment. Hardware such as a computer-based system that can transfer information (data) to and from the modem in digital format.

DTR Data Terminal Ready. A control lead from the computer that is set high when the computer is ready to input/output data.

Duplex Often referred to as full duplex. This means the modem can transmit and receive data simultaneously; half duplex means the modem can transmit and receive data, but not at the same time. The Executive 212 is a full-duplex modem.

EIA Electronics Industries Association (see RS-232-C Interface).

FCC Federal Communications Commission. The U.S. federal agency that regulates telephone and radio/TV communications.

Linking The procedure that allows automatic dialing of another telephone number if the first number is busy.

Logon The dialing procedure for gaining access to a specific computer, such as entering user name, passwords, etc.

Modem An acronym for modulator/demodulator. An electronic device that converts (modulates) digital data from a computer into analog signals that can be transmitted over telephone lines and converts received analog signals (demodulates for use by a computer).

Microprocessor A miniature computing device that can perform limited data processing, such as autodialing. It is used primarily to perform specific routines normally done by a computer, thus freeing the computer for other computing tasks.

GLOSSARY

Originate Designates the modem procedure that initiates a data call. A full-duplex modem transmits at a different frequency than the answering modem.

Parity A type of error check. A single parity bit is added to the transmitted binary word to make it contain an even or odd number of 1s.

PBX Private Branch Exchange. The telephone system within a company or institution.

Permissive Designates a fixed data transmit level of ¶ 9 dBm.

RS-232-C Interface Electronics Industries Association (EIA) communications standard that closely corresponds to the CCITT V.24 international recommendation. This standard is applicable to asynchronous or synchronous operation at transmission speeds up to 20 kbps in half or full duplex. It specifies the functional and electrical characteristics of the interface for connecting DTEs with DCEs.

Speed The data bit rate transmitted by the modem, expressed in bits per second (bps). The 212 Executive II transmits data at 1200 bps or at 0 to 300 bps.

212 EXECUTIVE II OPERATOR'S CHART

OPERATING MODE SELECTION

Mode	Switch Settings	Remarks
CASE	S4 Up S6 Up	Enter (**cr**)(**cr**) to wake modem.
AT	S4 Down, S6 Up	Enter **AT**(**cr**) to wake modem. If no response, enter **ATB**(**cr**) and **ATZ**(**cr**) to enable and display verbal result codes.
Manual	S4 Up or Down, S6 Down	You can also transfer from the CASE mode to the manual mode by pressing **Q** on the keyboard.

CASE MODE COMMANDS

Key	Command
Wakeup	
(cr)(cr)	Initialize
Stored Number Dialing	
Sn	Store number in memory n
n	Dial number in memory n
P	Pulse dial numbers that follow
T	Tone dial numbers that follow
&	Wait for second dial tone
%	Pause for 5 seconds
/	Add text to stored number
SC	Assign logon characters
Ln	Link to number in memory n
M	Multiple redial
R	Redial once
Keyboard Dialing	
K	Dial from keyboard
Manual Calls	
A	Answer manually
I	Originate manually

Disconnect/Reconnect

(any user-selected key)	Programmed disconnect. Press key three times as follows: • Wait at least 1 second • (key)(key)(key) with no more than 1 second between keystrokes • Wait at least 1 second
G	Go back on line
X	Hang up

Other

C	Clear all stored numbers
D	Display stored numbers
H	Help
O	Option select
Q	Quit
PARITY	Set parity
Backspace	Delete last entry (can use Control H)
(any)	Abort dialing

Test

T	Start analog (off line) or digital (on line) loopback test
D	End test

AT MODE COMMANDS (Use Uppercase AT Only)

Command	Description
Prefix	
AT	Attention code. Precedes all commands except A/
Wakeup	
AT(cr)	Initialize

Dialing Commands

D	Dial telephone number
P	Pulse dial numbers that follow
T	Tone dial numbers that follow
R	Reverse: force originate in answer mode
S	Dial stored number
;	Return to command state after dialing (semicolon)
,	Pause during dialing (comma)
!	Flash
@	Silent answer
W	Wait for second dial tone

Manual Calls

A	Answer call without waiting for ring

Automatic Answer

SO = 0	Disable automatic answer
SO = n	Automatically answer on ring n

Disconnect/Reconnect

(Any user selected key)	Programmed disconnect. Press key three times as follows: • Wait at least 1 second • (key)(key)(key) with no more that 1 second between keystrokes • Wait at least 1 second
H0	Hang up
H1	Go off hook
O	Go back on line

Other

A/	Reexecute last command
B0	CCITT mode
B1	Bell mode
C0	Turn carrier off
C1	Turn carrier on

E0	Disable echo in command state
E1	Enable echo in command state
F0	Enable echo in data mode
F1	Disable echo in data mode
&F	Restore default settings
I	Product identification
Mn	Speaker control
&M	Sync/async selection
Q0	Send result codes
Q1	Do not send result codes
%R	Display S resister content
Sr?	Read S register r
V0	Send digital result codes
V1	Send verbal result codes
Xn	Call attempt result codes
Y0	Disable long space disconnect
Y1	Enable long space disconnect
Z	Reset modem and enable options
&Z	Store telephone number
Backspace	Delete last entry

ASCII Character Set

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
0	00	NUL	32	20	SP	64	40		96	60	
1	01	SOH	33	21	!	65	41	A	97	61	a
2	02	STX	34	22	"	66	42	B	98	62	b
3	03	ETX	35	23	#	67	43	C	99	63	c
4	04	EOT	36	24	$	68	44	D	100	64	d
5	05	ENQ	37	25	%	69	45	E	101	65	e
6	06	ACK	38	26	&	70	46	F	102	66	f
7	07	BEL	39	27		71	47	G	103	67	g
8	08	BS	40	28	(	72	48	H	104	68	h
9	09	HT	41	29	)	73	49	I	105	69	i
10	0A	NL	42	2A	*	74	4A	J	106	6A	j
11	0B	VT	43	2B	!	75	4B	K	107	6B	k
12	0C	FF	44	2C	,	76	4C	L	108	6C	l
13	0D	RT	45	2D	-	77	4D	M	109	6D	m
14	0E	SO	46	2E	.	78	4E	N	110	6E	n
15	0F	SI	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	48	30	0	80	50	P	112	70	p
17	11	DC1	49	31	1	81	51	Q	113	71	q
18	12	DC2	50	32	2	82	52	R	114	72	r
19	13	DC3	51	33	3	83	53	S	115	73	s
20	14	DC4	52	34	4	84	54	T	116	74	t
21	15	NAK	53	35	5	85	55	U	117	75	u
22	16	SYN	54	36	6	86	56	V	118	76	v
23	17	ETB	55	37	7	87	57	W	119	77	w
24	18	CAN	56	38	8	88	58	X	120	78	x
25	19	EM	57	39	9	89	59	Y	121	79	y
26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	59	3B	;	91	5B		123	7B	
28	1C	FS	60	3C	<	92	5C		124	7C	
29	1D	GS	61	3D	=	93	5D		125	7D	
30	1E	RS	62	3E	>	94	5E		126	7E	
31	1F	US	63	3F	?	95	5F		127	7F	DEL