V.3400
Manual

For Sales or Service Contact:

Data Connect Enterprise

301-924-7400

http://www.data-connect.com/

sales@data-connect.com

code is user programmable and can be set to any value from a single 0 to any combination up to 99999999 using the %P=(desired code) command.

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

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

* *default*

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

Entering Remote Configuration %T=, &T

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

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

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

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

Example: ATD 555-1212%T01234

CCITT-V.42 BIS ERROR CONTROL PROTOCOL

V.42 bis is an industry standard for error control adopted by the Consultative Committee for International Telephone and Telegraph (CCITT).

The CCITT V.42 bis protocol incorporates two error control algorithms, LAPM and MNP. LAPM is a CCITT Link Access Protocol family member related to LAPB and LAPD currently in use in other communications applications. MNP is Microcom Networking Protocol that has become an industry standard by the number of its users.

The use of V.42 bis requires both local and remote modems to be V.42 bis compatible. Error control protocol is transparent to the user and requires no special hardware or software. Data to be transmitted is put in a buffer so the modem can retransmit it if an error occurs. The modem also buffers data received from the remote modem in case an error occurs and the data is retransmitted. To avoid overfilling the buffer, flow control is used to control data between the modem and the terminal. V.42 bis protocol options can be set by AT commands.

☞ **Note**

Error control protocols are only valid when using asynchronous DTE options.

RELIABLE

When a LAPM or MNP link is established the modem is in reliable mode. V.42 bis allows negotiation with a remote modem to the highest level of protocol common to both units. Both LAPM and MNP control data errors by retransmitting any block of data that was corrupted in transit. LAPM is assigned highest priority and if not supported, then an MNP connection is attempted.

AUTO-RELIABLE

In auto-reliable mode the modem negotiates to the highest protocol (LAPM or MNP) common to both modems. However, if a reliable connection cannot be established, auto-reliable allows the protocol to fallback to normal mode.

CONSTANT SPEED INTERFACE

The modem serial port adapts to the data rate of the DTE and does not change speed if the (modem) data link connects at another speed. Therefore the DTE to DCE interface speed is constant.

DATA COMPRESSION

Using MNP Class 5 data compression, the modem can achieve data throughput approaching 28800 bps. With LAPM data compression, the modem can achieve data throughput approaching 115200 bps. This increase in speed is achieved by automatically analyzing the data stream and reducing the number of bits required to represent the characters. 100% error-free transmission is assured by the application of the MNP or LAPM error control protocol on the compressed data.

Compression takes place only if the modem detects that the remote modem supports compression. If not, a reliable connection is made without compression.

Although data compression is compatible with any type of data, it is most efficient for ASCII text files. For maximum throughput when using data compression, the terminal should be set to a higher speed than the connect speed with the constant speed interface on and flow control enabled. When transmitting or receiving data files in one direction, the throughput can be increased for V.42 bits by having extra buffer and more processor time with the %C2 and %C3 data compression commands.

NORMAL MODE

No error control with or without constant speed DTE interface. Data is buffered.

DIRECT MODE

The DTE speed and DCE speed are forced to be the same. No error control or buffering.

☞ **Note**

In direct mode and the DCE link is established at a rate other than the original DTE speed, the modem will issue the connect message for the new DTE speed at the original rate. All subsequent data will be sent to the DTE at the new DCE speed.

FLOW CONTROL

If the serial port speed exceeds that of the modem connection, characters may be sent by the DTE to the modem faster than it can send them to the remote modem. The modem holds characters in an internal buffer until they can be transmitted. When this buffer is full, the modem uses flow control to cause the DTE to stop sending characters. As the modem continues to transmit data and the buffer empties, flow control is again used to cause the DTE to resume sending data. The modem can use hardware flow control (RTS/CTS) or in-band flow control (XON/XOFF).

PROTOCOL COMMANDS

These commands enable or control the various data compression, flow control, and error correction options of the modem. Table 6-1 illustrates mode and the associated features.

Table 6-1. Operating Modes and Conditions

Operating Mode	Error Correction	Data Compression	Flow Control	Data	Constant Speed Interface
Normal	Disabled	Not applicable	Allowed	Buffered	On or off
Direct	Disabled	Not applicable	Not applicable	Not buffered	DTE=DCE (slaved)
Reliable (MNP and LAPM)	Enabled	On or off	Allowed	Buffered	On
Auto-reliable (MNP and LAPM)	Enabled	On or off	Allowed	Buffered	On

Disconnect Buffer Delay   %D

Select a delay during which the modem processes data in its transmit and receive buffers before disconnecting. When a condition exists which causes a disconnect, the modem tries for n seconds to empty its buffers. When the buffers are empty or if n=0, the modem disconnects immediately.

Command	Operation
%D	Disconnect buffer delay disabled *
%Dn	Disconnect buffer delay value (n = 1-255 seconds)

* default

Serial Port (DTE) Constant Speed   \J

The \J command allows DCE and DTE to operate at different speeds. The \J command forces serial port (DTE) speed to follow data link speed in any mode.

If the modem is in direct mode (\J) and a DCE link is established at a speed other than that of the original DTE autobaud speed, the modem will issue the CONNECT message for the new DTE speed at the original rate. All subsequent data will be sent to the DTE at the new DCE speed.

Command	Operation
\J	Disable slaved DTE/DCE (constant speed DTE on)*
\J1	Enable slaved DTE/DCE (constant speed DTE off)

* default

V.42 Optional Detection Phase   \M

This is a data sequence that speeds up the LAPM link negotiation time if V.42 LAPM is supported by the remote modem.

Command	Operation
\M	V.42 fast detect data sequence disabled
\M1	V.42 fast detect data sequence enabled *

* default

Operating Mode   \N

Select the V.42b mode to be uses in data mode. An \Nn command issued during command mode while a connection is in progress will not affect the current connection but will be acted on for subsequent connections. LAPM or MNP protocol operation is referred to as MNP-only mode, and the auto-reliable modes allow protocol fallback.

Command	Operation
\N	Normal mode — no error control; data buffered
\N1	Direct mode — no error control; data not buffered
\N2	MNP only — try MNP; disconnect if not successful
\N3	MNP or normal — try MNP; fallback to normal async
\N4	LAPM only — try LAPM; disconnect if not successful
\N5	LAPM or normal — try LAPM; fallback to normal
\N6	LAPM or MNP — try both protocols; disconnects if not successful
\N7	LAPM, MNP, or normal — try both protocols; fallback to normal if not successful *

* default

Auto-Reliable Fallback Character   %An

Select the ASCII character to be recognized as the auto-reliable fallback character by the answering modem. During negotiation of protocol in auto-reliable mode, the answering modem switches from reliable to normal mode when receiving the auto-reliable fallback character from the calling modem and passes the character to the serial port.

Enter the %An command to set the auto-reliable fallback character (n=1-27 decimal representing an ASCII character).

Command	Operation
%A0	Disable auto-reliable fallback character *
%An	Sets ASCII character to be recognized as the auto-reliable fallback character

* default

☞ **Note**

The modem must be set for auto-reliable mode (ATW3, W5, W6, W7).

Serial Port Flow Control \Q

The \Q commands set the type of flow control used by the serial port. If the serial port speed exceeds that of the modem connection, characters may be sent by the DTE to the modem faster than it can send them to the remote modem. The modem holds characters in an internal buffer until they can be transmitted. When this buffer is full the modem uses flow control to stop data from DTE. As the modem continues to transmit data and the buffer empties, flow control is again used to cause the DTE to resume sending data.

The \Q - \Q3 commands affect both DTE and DCE flow control.

The \Q4 - \Q7 commands affect only flow control by the DCE.

The \Q command disables flow control bilaterally.

When the \Q1 command is used, the modem generates and accepts XON/XOFF characters to start and stop the data flow. These characters have the same parity as the DTE setup taken from the last AT command.

When the \Q2 command is used, the modem uses CTS off to stop the data from the DTE and CTS on to restart it.

When the \Q3 command is used, the modem uses CTS off to stop the data from the DTE and CTS on to restart it. The DTE uses RTS off to stop data from the modem and RTS on to restart it.

The \Q4 command disables flow control by the DCE.

The \Q5 command enables XON/XON/XOFF flow control by the DCE only.

The \Q6 and \Q7 commands force the modem to use RTS off to stop data from the modem and RTS on to restart it. This does not effect DTE flow control.

Command	Operation
\Q	Disable bilateral flow control
\Q1	Enable bilateral XON/XOFF flow control *
\Q2	Enable DTE CTS flow control, disable DCE flow control
\Q3	Enable CTS/RTS bilateral flow control
\Q4	Disable DCE flow control
\Q5	Enable DCE XON/XOFF flow control *
\Q6	Enable DCE RTS flow control
\Q7	Enable DCE RTS flow control

* default

XON/XOFF Pass Through \X

This option is active when flow control of the modem by the DTE has been selected for XON/XOFF and the connect mode is MNP-only or normal. It enables or disables the sending of local flow control characters (XON/XOFF) to the remote modem as well as being acted on in the local modem. In MNP-only mode the modem treats incoming XON/XOFF characters from the remote modem as data characters. In normal mode the modem will look at the \Q command and and act accordingly.

⚠️ **Caution**

With \X1 in effect local flow control characters will be sent to the remote system. These characters may turn on the data flow from the remote system before the modem is ready to receive more data, possibly resulting in data loss.

Command	Operation
\X	Process but do not pass XON/XOFF characters to remote DCE *
\X1	Process and pass XON/XOFF characters to remote DCE

* default

Data Link Flow Control \G

This flow control paces data from the remote modem to the local modem during a normal connection. When the \G1 command is sent, the modem uses XON/XOFF to start/stop data transmission from the remote modem. This command is ignored during an MNP connection.

Command	Operation
\G	Disable data link flow control *
\G1	Enable data link flow control

* default

☞ Note

The V.3400 will transmit the XON/XOFF characters to start/stop data transmission from the remote modem. The V.3400 will not respond to the XON/XOFF characters. This is to insure that a false XON/XOFF is not detected resulting data loss.

Break Control \Kn

Use \Kn (n = 0-5) to indicate the action taken by the modem when a break is encountered.

Command	Operation
\K	Break option 0
\K1	Break option 1
\K2	Break option 2
\K3	Break option 3
\K4	Break option 4
\K5	Break option 5 *

* default

Conditions under which breaks may occur are explained below with descriptions of the modem's response under the different \K command break options.

A break is sent to the serial port while the modem is in *connect state* during an *reliable* or *normal connection* (no protocol, data buffered).

Command	Operation
\K, \K2, \K4	Enter command mode but do not send break to the remote modem
\K1	Empty the data buffers and send break to the remote modem
\K3	Immediately send break to the remote modem
\K5	Send break to the remote modem in sequence with any data received from the serial port

A break is sent to the serial port while the modem is in *connect state* during a *direct connection* (no protocol, data not buffered).

Command	Operation
\K, \K2, \K4	Immediately send break to the remote modem and enter command mode when break is through
\K1, \K3, \K5	Immediately send break to the remote modem

A break is received from the remote modem while the modem is in *connect state* during a *normal connection* (no protocol, data buffered).

Command	Operation
\K, \K1	Empty the data buffers and send break to the serial port
\K2, \K3	Immediately send break to the serial port
\K4 , \K5	Send break to the serial port in sequence with any data received from the remote modem

A transmit break command is issued while the modem is in *command state* during a *reliable* (protocol) or *normal connection* (no protocol, data buffered).

Command	Operation
\K, \K1	Empty data buffers and send break to the remote modem
\K2, \K3	Immediately send break to the remote modem
\K4 , \K5	Send break to the remote modem in sequence with any data received from the serial port

Inactivity Timer \T

The \T command specifies the number of minutes the modem will stay online without transmitting or receiving data before hanging up. When the value is set to 0, the timer is disabled.

Command	Operation
\T	Disable inactivity timer *
\Tn	Set inactivity to n (n=1-255) minutes

* default

Maximum Reliable Block Size \A

The \A command sets the maximum transmit block size for MNP connections. Use this command to force the modem to transmit smaller blocks in an MNP connection. A smaller block size maximizes throughput when marginal line conditions are causing errors. The modem sends a block up to the size specified by the \A command.

Command	Operation
\A	Maximum transmit block size = 64 characters
\A1	Maximum transmit block size = 128 characters
\A2	Maximum transmit block size = 192 characters
\A3	Maximum transmit block size = 256 characters *

*, default

Transmit Break / Set Break Length \B

The \B commands tell the local modem to send a break signal to the remote modem. In all modes except direct, S79 determines the length of the break sent to the DTE by the modem receiving a break signal over the link. S79 may be set directly or via \Bn where n=1-255 in 20 ms increments. The default is 35 (700 ms).

Command	Operation
\B	Sends a break signal to the remote modem (does not modify S79) *
\Bn	Sets S79 to length of break desired; n=1-255 in 20 ms increments; default= 35 (700 ms)

* default

Set Auto-Reliable Buffer \C

This determines whether or not a modem in reliable mode will buffer data received from a modem that is not in reliable mode during the 4 seconds in which the modems try to establish a reliable link. Use these commands when the modem is in the auto-reliable mode and is expected to process a call from a modem not in a reliable mode.

Command	Operation
\C	Disable auto reliable data buffer *
\Cn	Buffer data for 4 seconds or 200 characters

* default

V.42bis Data Compression %C

The %C command determines application of data compression while running L-APM protocol.

Command	Operation
%C	Data compression disabled
%C1	Enabled on transmit and receive data *
%C2	Enabled on transmit data only (enhanced compression)
%C3	Enabled on receive data only (enhanced compression)

* default

Chapter 7
Test Mode Operation

GENERAL

Diagnostic tests are used to isolate faults in the communications path.
Diagnostic tests will terminate after the period of time specified by S18.
If S18 is set to 0, the timer is disabled and tests will run continuously.
Tests may also be terminated by the &T command. When in test modes
without test pattern, issue the escape sequence +++ to return to
command mode before terminating the test with the &T command.

☞ **Note**
*Local analog loopback with or without test pattern is the
only test available in protocol mode.*

Test Categories

Diagnostic tests fall into two categories: those with test patterns and
those without. Refer to Table 7-1.

Table 7-1. Test Operating Mode Requirements

Test	Offline	Online
LAL (Local Analog Loopback)	X	X
LAL/TP (Local Analog Loopback with Self Test)	X	X
LDL (Local Digital Loopback)		X
RDL (Remote Digital Loopback)		X
RDL/TP (Remote Digital Loopback with Self Test)		X
TP (Test pattern)	X	X

☞ **Note**
*These tests do not apply to fax mode and should only be
performed when the modem is configured for data opera-
tion.*

LDL, RDL, and RDL/TP tests are initiated after making an online data connection in normal or direct mode only. LAL and LAL/TP are initiated while in offline command mode. These tests can be initiated by AT commands or by using the LCD front panel SELECT TEST menus. Refer to Table 7-2.

Table 7-2. Test Commands

Command	Operation
&T	Terminate any test
&T1	Initiate local analog loopback test
&T3	Initiate local digital loopback test
&T4	Grant remote requested digital loopback *
&T5	Deny remote requested digital loopback
&T6	Initiate remote digital loopback test
&T7	Initiate remote digital loopback test with test pattern
&T8	Initiate local analog loopback test with test pattern
%T	Transmit test pattern

* *default*

Terminating a Test In Progress &T

Tests can be terminated manually or automatically. The &T command terminates a test manually. The modem automatically goes to command mode during LDL, LAL/TP, and RDL/TP tests. Enter the &T command to terminate the tests.

For LAL and RDL, enter the escape sequence before the &T command to go to the command mode.

By preloading register S18 with 1 to 255, each test mode automatically times out after the specified number of seconds and exits back to the command mode. Loading S18 with 0 disables the auto timeout feature and the test will run continuously until manually terminated.

For example:

To	Run the self test analog loopback test for 30 seconds
Enter	ATS18=30&T8

The modem should respond with 000 after 30 seconds.

TESTING THE LOCAL MODEM

Test local operation with the modem offline in command mode. Use LAL and LAL/TP to test the local modem and the communications to the local DTE.

Local Analog Loopback &T1

In Local Analog Loopback the modem transmitter connects to its receiver so the analog signal normally sent over the telephone line is received locally.

If operating on leased lines, the lines are terminated into 600 ohms (Table 7-1). If off hook on a dial-up line, the modem is forced on hook.

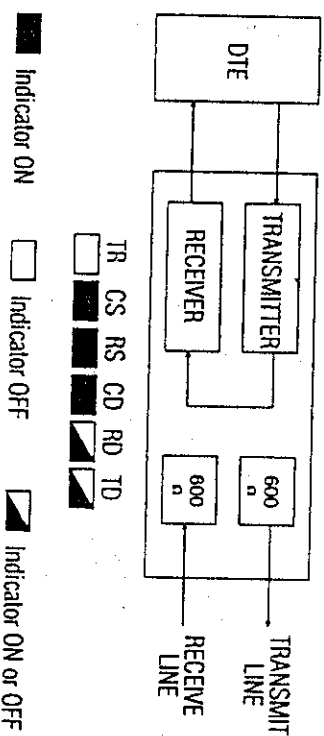| Indicator ON	Indicator OFF	Indicator ON or OFF

Figure 7-1 Local Analog Loopback
(4-Wire Operation and 2-Wire Operation)

For 2-wire operation, Analog Bilateral Loopback is invalid. In 4-wire operation, Analog Bilateral Loopback connects the receive line to the transmit line through a buffer amplifier.

If Digital Bilateral Loopback is enabled locally, the local DTE is looped back to itself (Table 7-3). If disabled, the local DTE receives a constant mark.
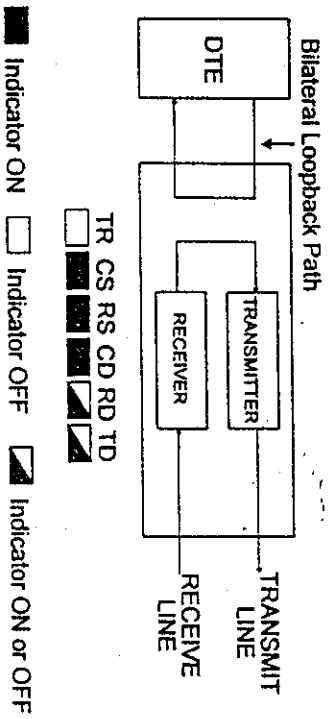
Bilateral Loopback Path

TRANSMIT LINE

RECEIVE LINE

TR CS RS CD RD TD

■ Indicator ON   □ Indicator OFF   ◪ Indicator ON or OFF

Figure 7-3 Local Digital Loopback with Bilateral Loopback Enabled

Grant/Deny RDL Request &T4, &T5

Local operators can deny a request from the remote modem for remote digital loopback.

To   Allow your modem to be placed in RDL by a remote operator

Enter   AT&T4

To   Prevent your modem from entering RDL

Enter   AT&T5

Remote Digital Loopback   &T6

The initiating modem signals the remote modem to go to Digital Loopback. The remote modem receives and then retransmits data back to the local modem. If Digital Bilateral Loopback is enabled on the remote modem, the remote DTE is looped back to itself (Figure Table 7-4).

Local (initiating) Modem   Remote Modem

                                            Bilateral Loopback Path

TR CS RS CD RD TD   TR CS RS CD RD TD

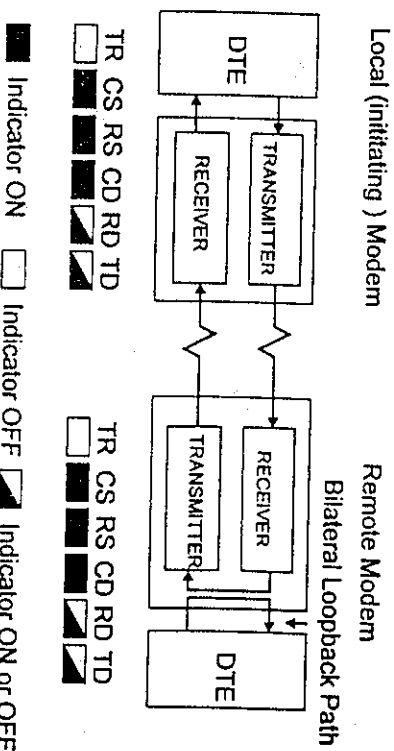■ Indicator ON   □ Indicator OFF   ◪ Indicator ON or OFF

Figure 7-4 Remote Digital Loopback with Digital Bilateral Loop Enabled at the Remote Site

After making the data connection, enter the escape sequence to return to command mode. Entering &T6 places the remote modem in digital loopback provided the remote operator enters the &T4 command to allow an RL request. Enter a test message and verify the message is being looped back to your terminal screen. If the message is incorrect, use the analog loopback tests on both modems to isolate the problem. If both modems run analog loopback without errors, the problem could be with the phone line.

Remote Digital Loopback with Self Test &T7

After making the data connection, enter the escape sequence to return to command mode. Entering &T7 places the remote modem in digital loopback provided the remote operator enters &T4 to allow an RL request. Once in RDL/TP, the local modem transmits a test pattern and

automatically verifies that the remote modem is looping the pattern back (Table 7-5). Enter &T to exit RDL/TP and return to command mode. Enter the O command to return online in data mode.

Exiting RDL/TP the modem responds with a three digit value between 0 and 255 representing the number of errors which occurred during test pattern detection. If errors occurred repeat the test several times to verify the consistency of the problem, then use the analog loopback tests to isolate the problem.
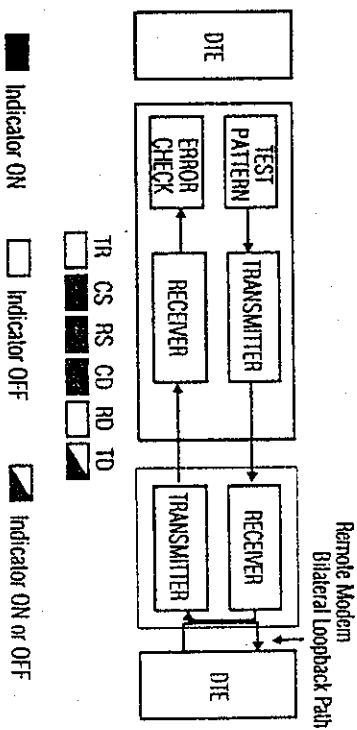

Figure 7-5 Local Modem Initiating Remote Digital Loopback with Test Pattern

■ Indicator ON   □ Indicator OFF   ▨ Indicator ON or OFF

Test Pattern   %T

In Test Pattern, transmit data from the local DTE is blocked and replaced by a V.52 compatible test pattern. When the modem transmits the test pattern, it expects to receive the same pattern.

Bilateral Test Enable / Disable   *DG

Enable or disable bilateral test functions.

Command	Operation
*DG	Bilateral digital loop disabled *
*DG1	Bilateral digital loop enabled

default

DTE Controlled Remote Digital Loopback (Pin 21)   *RD

To enable DTE controlled remote digital loopback, enter *RD1. Enabled, the modem goes into remote digital loopback when it detects an off-to-on transition of pin 21 while in the online data mode. Test ends when it detects an on-to-off transition of pin 21 and then returns to online data mode. To disable this function enter the *RD command.

Command	Operation
*RD	Ignore pin 21 *
*RD1	RDL enabled (pin 21)

default

☞ **Note**

If the test timeout option is enabled and pin 21 remains high, the modem returns to online mode at the end of the test timeout period and will not re-enter the test mode until an off-to-on transition of pin 21 is detected.

DTE Controlled Local Analog Loopback (Pin 18)   *LA

To enable DTE controlled local analog loopback test, enter *LA1. Enabled, the modem goes into local analog loopback when it detects an off-to-on transition of pin 18. Test ends when it detects an on-to-off transition of pin 18. To disable, enter *LA.

Command	Operation
*LA	Ignore pin 18 *
*LA1	LAL enabled (pin 18)

default

☞ **Note**

If the test timeout option is enabled and pin 18 remains high, the modem returns to idle mode at the end of the test timeout period and will not re-enter the test mode until an off-to-on transition of pin 18 has been detected.

Chapter 8
Security

GENERAL

The V.3400 series of modems provide three features to assure secure operation of the modem. These features are front panel password protection, autocallback, and secure mode of operation. The topic of front panel password protection is discussed in Chapter 4.

Two levels of major security operation are available: high and low. The AT commands for each level are explained below.

AUTOCALLBACK SECURITY

Autocallback is an additional security feature that is separate from Low and High Security. Autocallback forces an answering modem to dial the selected autodial (*AU/n) telephone number after answering a call, holding the line for one second, and then disconnecting. When autocallback is enabled the modem will not train on a direct call. Access autocallback via Main Menu #5 on the LCD. Refer to Chapter 4 for further information. S72 enables/disables autocallback. S78 determines the delay in seconds before autocallback is initiated.

LOW SECURITY OPERATION

Low security operation provides password protection against unauthorized dial-up access. High security is another feature which is discussed later in this chapter. The security feature can be enabled/disabled with AT commands when operating on a dial-up system.

Transmitted data and received data lines are suppressed to the host DTE during security validation; all other signals (CTS, DSR, RI, etc.) operate as selected. After the password has been validated, the modem operates normally.

Operating without Low Security

The modem is not factory set for security and operates like a standard V.34, except for additional AT command which allow access to security. With these commands a user can set passwords and turn security on. When security is enabled, a password must be used to change security options.

Operating with Low Security

A secure modem will not allow data transfer between its host and a remote host until a correct password is received from the calling party. If an incorrect password is received the secure modem disconnects. The front panel is not locked out because this type of security prevents unauthorized dial-up access.

Remote Operation

The originating modem must transmit the correct security code before the secure modem will allow data transfer. If accessing a secure remote modem, the local modem prompts the user with

PLEASE ENTER YOUR PASSWORD =>

To   Respond to the password prompt

Enter   AT$ followed by the password.

After receiving the $ the secure remote modem accepts the security code and waits for a carriage return. Entering more than ten characters is invalid and causes the secure modem to disconnect. Entering a valid password causes the calling party's DTE to display PASSWORD ACCEPTED.

Local Operation

When accessing the local modem, the password is not required except when the user wants to change a security option. To change a password or to turn security on or off, the user must enter a password when entering the appropriate AT commands. EIA-232 signals to the DTE are not affected by security in command mode.

Passwords

Two passwords of up to ten characters each can be stored in the modem's nonvolatile memory. AT commands change the passwords. Backspace and escape keys are not supported for password entry. The passwords can consist of any printable characters except a dollar sign, comma, or space. Passwords are case sensitive.

The passwords have the same priority level and are interchangeable with each other. This can be helpful in situations such as when the user forgets one of the passwords.

LCD Indication of Security

The front panel LCD indicates whether security is on or off. If disabled, the LCD appears as if the security does not exist. If enabled, Main Menu #1 consists of the following display:

```
SECURE 28800
XXXX
```

Restrictions In Security Operation

If the caller gives the wrong password, while security is enabled, the modem will disconnect.

LOW SECURITY COMMANDS

The following AT commands operate low security:

Set Password $S=x

The $S=x command sets an empty password location to x. This command only applies when no password or only one is stored in memory. It can not be used to change a password.

Changing a Password $C=x, y

The $C=x, y command changes either password where x represents the old password and y is new one.

Deleting a Password $C=x, -

The $C=x, - command deletes password x from memory. Security is automatically disabled if the last password is deleted.

Security Reset $DR

This command resets security to its initial state (off with no passwords stored). The option is not available in remote configuration.

Disabling Security $D=x

The $D=x command disables security where x is either password.

Security Status $D?, $E?

The $D? or $E? commands display the current status of security (on or off).

Enabling Security $E=x

The $E=x command enables security where x is either password.

HIGH SECURITY

Compatibility

The calling modem does not require any security capabilities to connect with a secured V.3400. Access to the V.3400 host is gained by following the appropriate logon procedure as described in following text. All security operations are controlled by the secured V.3400.

Capacity

The modem stores in nonvolatile memory the password, security level, callback phone number, and status information for 50 users.

Operating without High Security

The modem is factory set with security disabled. In this mode the local DTE is connected to the local modem as usual except that the command to enable or view the status of the security feature will be accepted and processed.

Operating with High Security

With high security enabled, each user must follow the appropriate logon procedure. The procedure for remote users is determined by their assigned security level. Upon termination of the connection, the secured modem waits for the next call and password sequence. A local user must logon to the secured V.3400 to use the unit.

If a power outage occurs the logged on user must logon again when the power is restored.

For optimum security operation a reliable connection should be used.

SECURITY LEVELS

The V.3400 provides three levels of security to prevent unauthorized access by a remote user.

Level 1: Password Only

This is the lowest level of dial-up security. The user is prompted for an ID and password; if invalid, the modem hangs up.

Level 2: Password with Callback

This security level also requires that the user call from a pre-set telephone number. After the user enters a correct ID and password, the modem looks up the telephone number and calls the user back at that number.

Level 3: Password with Callback and Password Re-Entry

This is the highest level of security and is similar to Password with Callback except that after the user answers the callback call, the modem prompts him again for the password.

SUPERUSER

The superuser has access to all user information for administrative purposes and can change user logon requirements and privileges.

Superuser status can be gained at the local modem or from a remote Motorola or UDS modem via remote configuration, if the "Remote Superuser" option is enabled.

The superuser must first logon as a regular user, then request the superuser privilege.

Incorrect attempts to gain superuser privilege are logged in the users status information field in nonvolatile memory. After seven invalid attempts, the user is suspended from access to the V.3400 until cleared by the superuser.

To reinstate a suspended user, logon as a different regular user, then request superuser privilege in order to clear the illegal attempts count.

If the local superuser disables security, the only security commands available are those used to enable security or to check security status.

Passwords

Passwords can be changed or deleted by the superuser. The regular user can change his password only if the "user changes" option has been enabled by the superuser. Refer to the Extended Features section for more details.

When calling from a remote location, the user is prompted for a password. Once the password is entered, the user is either allowed direct access or disconnected and called back depending on the assigned security level.

During password entry or logon, each password character is displayed as an "X" on the DTE screen. The backspace key can be used for editing. For remote logon, the Esc key can be pressed prior to the carriage return to clear the password entry.

Incorrect password attempts exceeding the threshold set in S77 for a specific user will cause the modem to disconnect. Each call exceeding the threshold increments the ILLEGAL ATTEMPTS counter by one. After seven calls the ILLEGAL ATTEMPTS counter will have reached maximum and the user will be suspended.

Default Passwords

The modem is shipped from the factory with a default password for the superuser and for one regular user. They are

- SUPERUSER System administrator
- USER 1 User number 1

Passwords for users 2 through 50 are left blank.

It is recommended that the superuser change the default SUPERUSER and USER 1 passwords as soon as possible.

HIGH SECURITY COMMANDS

These commands are only allowed for a local superuser.

Enabling High Security $EH=pw

The $EH=pw command enables high security, where pw is the superuser's password.

To initialize high security for the first time enter

AT$EH=SUPERUSER

to enable security, then enter

AT$I=USER1 <CR> followed by
AT$S=SUPERUSER <CR>

to gain superuser status. Passwords, security levels, and callback numbers can now be entered or modified.

When superuser activities are completed, return to regular user status by entering AT$$. Once in regular user status AT$$ becomes the final local logoff command.

Disabling High Security $D

Enter the $D command to disable security. The modem will operate as a nonsecure unit except that it will respond to enable and check security status commands.

Setting Passwords $Pn=pw$pw

Select a password between 4 and 34 printable ASCII characters.

To store the password enter:

AT$Pn=pw$pw

Where n is the user number (0-50) and pw is the new password which is entered twice to ensure that is has been entered correctly.

The $ character is used as the marker between the dual password entries and cannot be used as part of the password.

Passwords cannot be recalled from nonvolatile memory.

Note

Superuser password is critical because the security feature cannot be configured without it.

After logon as USER 1 and gaining superuser privileges, enter the $Pn command to modify passwords.

For the superuser enter:

AT$P0=pw$pw

For user 1 enter:

AT$P1=pw$pw

Record the passwords in your personal records.

Caution

Do not forget the superuser password. Systems administrator functions cannot be accessed without it and the modem must be returned to the factory for re-initialization.

Set Security Levels Ln=m

The System Administrator (superuser) assigns each user with a security level by entering the $Ln=m command (where n is the user number and m is the security level).

Set User Callback Number Cn=m

The callback number, used with level 2 or 3 security, is dialed by the modem after a user has successfully called in from a remote location and entered their password.

Level 1 security does not require a callback number; however, if the security level is changed to level 2 or 3 a callback number will be required.

The callback number should be programmed initially using the $Cn=m command. Where n is the user number and m is the callback number.

Extended Features $W

$W1

A regular user can change his password and callback number if the local superuser has enabled the $W1 option.

$W2

A remote regular user can gain superuser privilege once the local superuser has enabled the $W2 command.

$W0

The extended feature options can be cleared by a local superuser by entering the $W0 command.

Display Extended Feature Status $W?

Enter the $W? command to display the status of the user changes and remote superuser options.

Display / Reset Illegal Access Attempt Counters $M, Mn, $M*

This command informs the superuser of any illegal attempts to gain superuser status and the users current status. The status will either be "normal," indicating the user is still able to logon to the secure V.3400, or "suspended," indicating that the user made more than seven illegal attempts to gain superuser status and has been automatically suspended.

When the superuser logs on, the secure V.3400 automatically displays any illegal attempts since the last superuser logon. If it is not reset, the illegal attempt count will remain and the superuser will not be reminded unless more illegal attempts occur. To manually request this same information enter

AT$M

The V.3400 responds by scrolling any illegal attempt information onto the screen as in the following example:

USER NUMBER: 01, ILLEGAL ATTEMPTS: 1,
STATUS: NORMAL

USER NUMBER: 14, ILLEGAL ATTEMPTS: 7,
STATUS: SUSPENDED.

Enter the $Mn command (where n equals user number) to reset a
specific user's illegal attempt count.

OK

Enter the $M* command to reset all of the user's illegal attempt count.

Factory Reset $F=pw$pw

To reinitialize the security feature enter the $F=pw$pw command
(where pw is the "current" superuser password). This command deletes
all user information and reinstates factory default passwords. User
information cannot be recalled.

Removing a User $Rn

This superuser command removes a user from active status without
deleting all of the users information. The user can be restored to active
status by setting the password with the corresponding user number as
previously mentioned. The command to remove a user is

AT$Rn

where n is the user numbers 2-50.

The superuser or user with ID #1 cannot be deleted from the user list.

Security Status $E?

System security status can be verified using the $E? command.

Display User Status $S?

Enter the $S? command to indicate whether or not the current user has
superuser status.

The V.3400 responds with one of the following responses:

SUPERUSER STATUS
NORMAL STATUS

Verify User Information $In, $IBn

Security level and callback number can be displayed using either the $In
or $IBn command. To display the assigned security level and callback
number for a single user enter

AT$In where n is the user number.

A regular user can only check his own information. A user with supe-
ruser privileges can check any user's information.

A user with superuser privileges can also display the assigned security
level and callback number for each valid user within a block of ten
consecutive user numbers by entering:

AT$IBn where n is the first user number.

Request Superuser Privilege $S=pw

Once logged on as a user, superuser privilege can be requested by
entering the $S=pw command, where pw is the superuser password.

When the correct password has been entered, the V.3400 responds with

SUPERUSER STATUS

Local Logon Command $n=pw

Enter the $n=pw command to logon locally to the secure V.3400.
Where n is the user number and pw is the password.

OK

Local Logoff Command $$

To logoff after a local session enter

AT$$

Remote Logon Procedure $n=pw

The remote logon procedure is required to access a secure V.3400.
When calling into the secure V.3400 from a remote location the user is
prompted to enter a password. The password must be entered as

$n=pw

where *n* is the user number and *pw* is the users password.

If the password entry is incorrect, the password entry field will be cleared and the remote user will be allowed further entries until the number of invalid attempts matches the lockout threshold stored in S77. At this point the secure V.3400 drops the call.

If the password entry is correct the secure modem sends the PASS-WORD ACCEPTED message to the remote site. Depending on the assigned security level, the user is given

* immediate access to the DTE connected to the secure modem,
* a callback sequence will commence, or
* a callback with password reentry.

When the call is terminated from either end the secure V.3400 automatically resets itself to the secure mode for the next remote or local user.

While a remote caller is initiating a call to the secure V.3400, all status messages and control leads which would notify the local DTE of the incoming call are suppressed. The secure V.3400 uses the value stored in S0 to determine the number of rings on which to autoanswer. If S0 is set to 0 incoming calls will not be answered.

If a local user is logged on during an incoming call, a RING message is displayed but the call will not be answered until the local user logs off, issues an A command, or presses the TALK/DATA button.

If the local user logs off, the call will be answered and the remote user must follow the normal password procedure. If the local user enters A or presses TALK/DATA the call to the remote user connects normally.

Chapter 9
Fax Operation

GENERAL

The V.3400 can send and receive fax documents at speeds up to 14400 bps when used with the appropriate software. As a fax modem, the modem conforms to EIA-578 which defines a standard interface between the DTE (a PC with fax software) and the DCE as a fax modem.

When used with a Class 1 fax software package, V.3400 is CCITT Group 3 compatible and can send and receive documents at 2400, 4800, 7200, 9600, 12000, or 14400 bps with any Group 3 fax machine or PC with a fax modem.

Service Class selection configures the modem for Class 0 data mode or Class 1 fax mode. The LCD display indicates when fax mode is enabled. The V.3400 default configuration is for data mode; Service Class is normally only changed by the software as necessary.

Previous chapters in this manual contain information about the modem that should be understood prior to fax operation. Those chapters should be read before this chapter.

Users should understand the fax software manual before attempting fax communications.

FAX OPERATION

The user's manual for the Class 1 fax software package should provide most information necessary to configure the software and send and receive faxes.

The information in Chapter 2 of this manual should be considered as well, and also the next section of this chapter provides important information for proper fax communications.