V.3225/V.3225L Manual

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Operation Chapter 4

GENERAL

This chapter contains a functional description of the

INDICATORS **CONTROLS AND**

The front panel houses the LCD panel and LED indicators. The power switch is located on the rear

LED

DESCRIPTIONS

The LEDs display modem status during various op-

Request to Send

RS - lights when the data terminal is ready to send data to the modem. This signal is input on EIA-232 pin 4

Clear to Send

on EIA-232 pin 5. CS - lights when the modem transmitter is ready to accept data from the terminal. This signal is output

Quality Monitor

on EIA-232 pin 11. QM - lights when poor signal quality produces a bit error rate of 1 x 10^4 or greater. This signal is output

Carrier Detect

detected or, if enabled, when V.42 negotiation is complete. This signal is output on EIA-232 pin 8. CD - lights when the received audio carrier signal is

Received Data

output on EIA-232 pin 3. RD - lights for a space at the receive data output, indicating receive output data activity. This signal is

Transmit Data

input on EIA-232 pin 2. indicating transmit input data activity. This signal is TD - lights for a space at the transmit data input,

POWERUP

TALK (on the "L"

TALK - lights to indicate the unit is in talk mode; it is only on the model without the LCD

Procedure **Quick Startup**

similar, remote station is available for communicaand telephone line connections are made, and that a nous dial-up option set is in effect, that power, DTE, bers have been inserted in memory, that an asynchrothe modem. The procedure assumes that phone num-This procedure can help with first time operation of

- Ensure the modem is installed according to the instructions in Chapter 2.
- Turn on the computer and the modem.

Manual Dialing

After turning the modem on the LCD shows the software version and advances to main menu 1.

- Press TALK/DATA. The display will show V.32 9600 TALK.
- Pick up the handset and dial the phone number of the remote modem
- If the remote modem is set for autoanswer a high pitched tone (2100 Hz answer back tone) is heard
- Press TALK/DATA. This puts your modem in the DATA mode and data transfer can begin

tiate a connection and then ONLINE when the con-The display shows TRAINING as the modems negonection is made.

Manual Answering

The modem will autoanswer in both TALK or IDLE tion, set the front panel to TALK and the autoanswer mode. To manually answer the phone for conversa-

















allow answering the call before autoanswer does.

register (S0) to a ring count value high enough to

Operation

TALK/DATA and a data connection is established. When conversation is completed, both parties press

Starting at the V.32 9600 IDLE display, press NO

The display advances to DIAL STORED NUM-

















ON/OFF power switch on the rear panel to ON. A powerup procedure is not required. Turn the



(Front Panel) Autodial

















Dialing AT Command

computer in terminal mode, enter ATD and the Starting from V.32 IDLE or TALK and using a

telephone number to dial or ATDS and the memory

location to dial. When the enter key is pressed the

You can follow this sequence of events by observ-

ing the LCD and listening to the speaker

Press YES. The modem will proceed through the

dial sequence and establish a connection

Respond to the prompts until you reach the desired

number to dial





and listening to the speaker.

dial sequence starts. You can follow the status of

the dial sequence by observing the monitor screen



















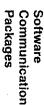












numbers, and establish communications with a re-A large variety of software packages compatible with the actions required for these functions. mote station. Software package instructions describe means for the operator to select options, insert phone the modem is available. Most of them provide a

ERROR CONTROL The modem provides error detection and automatic com Networking Protocol (MNP) levels 2, 3, 4, and 5 are supported. Level 2 is the asynchronous link accommodate a maximum of eight frames. Micro-The retransmission buffer is 2048 bytes long and can retransmission of data upon detection of an error. version, level 3 is the synchronous link version, level

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Operation

successive protocols until all are tried or a connection cannot be established the modern continues through tocol common to both modems. If the connection in dial mode, the modern negotiates the highest profor increased data throughput. When making a call efficiency, and level 5 implements data compression 4 is synchronous with optimized headers for increased

FLOW CONTROL

Flow control adjusts for differences in speed between modem. constant speed independent of the bit rate of the the modem and DTE. The DTE can operate at a

plished with the CTS and RTS interface leads. hex / 13 hex). Out-of-band flow control is accom-Inband methods employ the characters DC1/DC3 (1) band and out-of-band flow control are implemented can start and stop the modern transmitter. Both incan start and stop the DTE transmitter and the DTE Flow control works in both directions. The modem

AUTOBAUD

used by the DTE. Autobaud also detects the character size and parity The protocol processor will default to 9600 bps communicate with the DTE at that rate (autobaud) to automatically detect DTE speed and adjust to modem. The protocol processor allows the modem Autobaud is accomplished by sending the AT to the

for DTE speed, character length, and parity. Note: Autobaud overrides the LCD selection

OPERATION 4-WIRE

When configured for 4-wire operation, the modem is

Operation

a full-duplex, leased-line modem requiring a dediwill train and begin communicating with each other. cated leased lines are supported. The 4-wire leased sary. When connected via leased line the modems jack on the modem rear panel. Dialing is not necescated 4-wire leased line. Only point-to-point dedi-The DIAL jack can be used to connect a 2-wire PSTN line is connected to the TELSET / LEASED LINE line for dial backup.

the connection to be successful. same on both ends of a 4-wire leased line for forced answer and MNP options must be the Note: One modem must be configured for

using a CCITT V.32 type training sequence. not connect with a 4-wire leased line modem and 9600 rates only and incorporates a CCITT Note: 4-wire leased line mode supports 4800 V.33-like training sequence. The modem will

2-WIRE OPERATION

Line Operation 2-Wire Leased

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

begin communicating with each other. connected via leased line the modems will train and must be configured for FORCED ANSWER. When and dialing is not necessary. One of the modems nect a 2-wire PSTN line for dial backup. The leased LEASED LINE jack; the DIAL jack is used to conline connects the local and remote modems directly The 2-wire leased line is connected to the TELSET.

Operation

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

Operation 2-Wire Dial-Up

Connection to the telephone network is through the TELSET / LEASED LINE jack. DIAL jack. A standard telephone connects to the

PN.

security code, at the end of the dial string

command, without the = sign and followed by the

after dialing by placing the remote configuration Remote configuration may be entered immediately remote configuration mode.

To exit remote configuration, return DTE service to

the local modein. The AT&T command will exit

be performed as needed.

DTE service between local and remote modems may modem by issuing the ATO command. Switching DTE service may again be returned to the remote remote configuration, issue the +++ escape sequence.

To return DTE service to the local modem while in

Operation

CONFIGURATION REMOTE

modify the option set of a remote modem. Remote code is user programmable and provides protection ration in Chapter 5. from unauthorized entry. Refer to Remote Configu the remote (slave) unit to be modified. The security back, a security code, and an acknowledgment from through a routine incorporating remote digital loopconfiguration is initiated by the local (master) modem This mode of operation allows the user to view or

> OPERATION SECURE

operating on a dial-up system and requires the secure

modem to be set for MNP or buffered mode.

feature can be enabled with AT commands when

Secure operation provides password protection

against unauthorized dial-up access. The security

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

modems. Upon initiation of remote configuration virtual terminal and can serve both local and remote the local DTE is serving the remote modem. lished. Once established, the local DTE becomes a modem before remote configuration can be estab-The correct code must be received by the remote











































































































4

Security

Operating Without

The modem operates like a standard V.32 except several additional AT commands are available to access security. With these commands, any user can

in the FACTORY OPTIONS submenu. Resetting except for the RESET SECURITY? prompt located

V.32 unit. Security has no front panel operation been validated, the modem operates like a standard etc.) operate as optioned. After the password has

security clears both passwords and turns security off

security validation; all other signals (CTS, DSR, RI are suppressed to the host DTE before and during

Security may be enabled or disabled. TXD and RXD











modem is not already secure.

set the passwords and turn security on when the

















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Operation

Security Operating With

unauthorized dial-up access. cause the primary reason for security is to prevent disconnects. The front panel is not locked out bepassword is received from the calling party. If an incorrect password is received the secure modem between its host and a remote host until a correct A secure modem will not allow data transfer with

Remote Operation The remote modem must pass security validation the originator with tion has been established, the remote modem prompts accessing a secure remote modem, once communicabefore the secure modem will allow data transfer. If

PLEASE ENTER YOUR PASSWORD ===>

ď Respond to the password prompt

Enter as a lead-in character followed by the

ceiving a valid password the secure modem sends PW causes the secure modem to disconnect. After recharacters until the user presses the carriage return. Entering more than ten characters is illegal and After receiving the \$ the modem collects up to ten ACCEPTED to the originating modem.

Local Operation

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

Passwords

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



Security Reset

sign, a comma, and a space. Passwords are case

Operation

the passwords. some situations, such as when the user forgets one of be substituted for each other. This can be helpful in The passwords have the same priority level and may

Security LCD Indication of

enabled or not. If disabled, screens reterring to secu-The front panel LCD indicates whether security is consists of the following display: rity do not appear on the LCD. If enabled, main #1

SECURE 9600

and can be thought of as a restore-factory-options to its initial state (off and with no passwords stored) command. This option is located under the LOAD forgets both passwords this option will reset security front panel menu is RESET SECURITY. If the user FACTORY OPTIONS menu: The only security operation available through the

RESET SECURITY?

PUSHBUTTON ACTION

Advances to ERASE ALL

YES -

SECURITY INFO?

TALK/DATA - Returns to submenu LOAD OR STORE OPTION SET?

AT\$S=x

stored in memory. It can not be Sets an empty password location to when no password or only one is x. This command only applies

AT\$C=x, y

Changes either password where x is the new one. represents the old password and y

used to change a password.

AT\$C=x,-

disabled if the last password is This deletes password x from deleted. memory. Security is automatically

AT\$E=x

AT\$E?

password. Enables security where x is either

AT\$D=x

security (on or off). Disables security where x is either

Displays the current status of

ATSD?

AT\$E? security (on or off). Same as Displays the current status of

AT\$DR

x and y indicate passwords

stored).

initial state (off with no passwords This command resets security to its

> Security Restrictions in

Operation

disconnect. The following conditions will cause the modem to

Operation

Caller is 300 bps

Caller is synchronous

Secure modem has protocol or buffers disabled

Caller gives wrong password

These restrictions apply only when security is en-

DIAL BACKUP*

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

Automatic - backup due to extended loss of carrier or 4 unsuccessful retrains in 3 minutes

 Manual - user determined using front panel controls or *LB or *LD commands.

both units from dialing if the leased line fails. be configured for forced answer. This prevents units have autodial backup enabled, one must Caution: In 4-wire leased line operation, if both

connection is unsuccessful after three attempts, a begin communicating over the dial-up line. If the dial the call. The answer modem will remain idle while will go to idle mode for 5 seconds and then initiate prestored autodial number. The originate modem Both methods will cause the modem to dial the retrain on the leased line will be initiated looking for a ring. The modems then connect and

dial connection is resumed with a retrain. If the elapsed. To prevent unnecessary termination of the when commanded from the front panel or AT comperformed. If the leased line is not acceptable, the dial line connection, a leased line lookback test is mand. In automatic mode the return to leased line is leased line is acceptable, the dial connection is initiated after the lookback time in register S28 has In manual mode, the return to leased line is only done

ute. During this time the dial line connection is dial line is disconnected quired. When the LCD displays ON LINE again the maintained if a return to dial line operation is rewas initiated. The LCD will continue to display approximately 10 seconds after LEASE LOOKBACK LCD displays LEASE LOOKBACK. If the leased LEASE LOOKBACK for slightly more than a minline has been restored to service, data can be passed When the unit attempts to return to leased line, the

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

dropped and normal leased line mode is resumed.































* Not supported in V.22 mode.





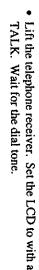




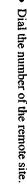


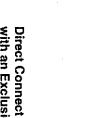
PLACING A CALL

with a Standard Telephone **Direct Connect**









voice mode (pull the exclusion key button up). Place the LCD in IDLE mode and the telephone in Wait for a dial tone.

After the link is established, hang up the telephone.

modem goes off hook and normal operation will press the TALK/DATA button. The originating When the answer back tone is heard, immediately

begin within 30 seconds. If not, hang up and return

to the first step.



- Dial the number of the remote site
- The remote modem answers with a 2100 Hz ananswer, hang up and return to the first step. swer back tone. If the remote modem does not
- When the answer back tone is heard, place the telephone in data mode (push the exclusion key button down)
- operation begins within 30 seconds. If a successful The originating modem goes off hook and normal connection is not established, return to the first

Front Panel **Autodial From**

- Advance the LCD to main #6, DIAL STORED NUMBER.
- Select number to dial and press YES to dial. Operation begins in 30 seconds. If not, press the TALK/DATA button and return to the first step.

Autodial with the **AT Command Set**

- To dial a number, for example 555-1212, type AT D 555-1212 carriage return.
- a carriage return. To dial a stored number type ATD Sn (n=1-9) and
- of the originate modem. whichever is currently in effect -- and takes the role The modem dials the number - either pulse or tone,

Refer to the Dial Commands section in Chapter 5 for additional dialing commands.

CALL **ANSWERING A**

Autoanswer

plugged into the telset jack will also ring. call in either mode. If TALK is selected, a telephone and TALK. The modem will answer an incoming Autoanswer by the modem is the normal configuration. Pressing TALK/DATA switches between IDLE

V.32 9600 IDLE

V.32 9600 TALK

On ring detection the modem front panel displays:

Manual Answer

V.32 9600 RINGING

ATA command at the DTE. Press TALK/DATA to answer the call or enter the

TERMINATION

The following conditions cause call termination:

- Abort Disconnect etc.) signal, no modem, (No answer, busy Default 30 sec. Selectable
 - 1 to 30 sec.
- ATH

Disconnect command.

T.

Loss of Carrier Selectable 100 ms to

Operation

- Disconnect
- DTR Disconnect Space Disconnect Receive Long Selectable for disabled or or 2 sec. Selectable for disable

10 ms to 2.55 sec.

- LCD Display off hook. Pressing NO pressed modem hangs up if pressed LCD displays DO When TALK/DATA is displays DO YOU WANT the connected telset is not no telset is connected or if TALK? When YES is YOU WANT TO GO TO TO DISCONNECT? disconnects. Pressing YES then
- Protocol Link Failure Establishment reliable link. Failure to establish Reliable mode only
- Protocol Inactivity Default (0) disabled. minutes. disabled or 1 to 255 Software selectable for

Timeout

- Protocol Retry Limit Exceeded trame 12 retransmissions of the
- 3 minutes. 4 unsuccessful retrains in dial backup enabled. Extended loss of carrier or Leased line operation with

Signal Quality

Modem power is turned off.

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V.32 Cleardown

V.32 cleardown is a method of call termination specified in the CCITT recommendation. The cleardown method incorporates a training sequence which ends with a command to disconnect. If long space disconnect is disabled, the cleardown sequence is activated by the ATH2 command.