V.3600
Manual

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Option Selection

There are six ways to change or select options:

- LCD - Using the front panel LCD and pushbuttons is simple, straightforward, and requires the least amount of technical background. Chapter 4 explains LCD operation.

- AT Commands - The AT command set can be used to select modem options. Chapter 5 describes AT commands.

- Status Registers - A series of special ATS commands allows the operator to change the decimal or hexadecimal value of a memory byte to change one or more options in that byte. Chapter 10 describes S-registers.

- Single Bit Status Registers - A second series of special ATS commands allows the user to change single bits within a byte to change an option. Chapter 10 also explains single bit control.

- Software Program - A wide variety of software programs is available, or advanced computer users can write their own software programs to interact with the modem. This manual does not discuss software programs.

- V.25 bis Commands - An extended set of V.25 commands allows selection of modem options during synchronous operation. Refer to Chapter 11.

Power-Up

A power-up procedure is not required. Turn on the modem using the ON/ OFF power switch on the rear panel. The modem is factory configured to operate in most public switched telephone applications. If you have stored a desired option set it will be automatically be restored at power-up.

Placing a Call

There are three methods for placing a call:

Dialing with a Standard Telephone

1) Lift the telephone receiver. Wait for the dial tone.
2) Dial the number of the remote site.
3) When the answer back tone is heard, immediately press the TALK/DATA button and hang up the telephone. The modems go through a connection sequence and establish a data link. If a data link is not established, return to Step 1.
4) After the link is established, hang up the telephone.

Autodialing from Front Panel

1) If the number to be dialed has not been stored, advance to Main Menu #6, CHANGE PHONE NUMBER.
2) Enter the number by using the NO pushbutton to scroll the menu and YES to select.
3) After the number is entered, press YES to store the number.
4) Advance the LCD to Main Menu #2, DIAL STORED NUMBER.
5) Select the number to dial and press YES. The number is dialed, and the modems follow the same process as two telephones.

Autodialing from a Terminal with the AT Commands

To dial a number, for example 555-1212, type AT D 555-1212 and press Enter, or enter ATDSn where n equals one of the stored telephone number locations 1-9.

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

Refer to the "Dial Commands" section on page 5-13 for additional dialing commands.

Answering a Call

There are three ways to answer a call:

Autoanswering

Normally the modem is configured to autoanswer on the first ring. If a telephone is plugged into the TELSET/LEASED LINE jack, it will also ring.

Answering Manually

When detecting a ring, the modem LCD displays ringing status.

Press TALK/DATA to answer the call and place the modem in the data mode.

Answering from Terminal with AT Command Set

The modem displays the ring response.

To answer a call, type ATA. The modem sends an answer-back tone and attempts to connect to the remote modem.

Ending a Call

There are two ways to complete a call:

Ending a Call Using the Front Panel

1) Press the TALK/DATA pushbutton. DO YOU WANT TO DISCONNECT will be displayed.
2) Answer YES.

Ending a Call from a Terminal with the AT Command Set

1) Enter +++ and the modem will enter command mode.
2) Enter ATH and the modem will terminate the call.

Reasons for Call Termination

The conditions described in Table 3-1 cause call termination.

Table 3-1. Reasons for Call Termination

Condition	Description
Abort Disconnect (No answer, busy signal, no modem, etc.)	Default 30 sec; select 1 to 255 sec (S-register 7).
ATH	Disconnect command.
Loss of Carrier Disconnect	Select 100 ms to 25.5 sec (S-register 10).
Receive Long Space Disconnect	Disabled or select 2 sec.
DTR Disconnect	Disabled or select 10 ms to 2.55 sec (S-register 25).
Loss of Line Current	
Cleardown	A disconnect method used in V.32 and V.34 mode.
LCD Display	When TALK/DATA is pressed, the LCD displays DO YOU WANT TO GO TO TALK? When YES is pressed modem hangs up, if no telephone is connected or if the connected telephone is not off hook. Pressing NO displays DO YOU WANT TO DISCONNECT? Press YES to disconnect.
Train Timeout	Modem fails to establish communication with remote site. Default is 30 seconds (S-register 7).
Protocol Link Establishment Failure	Reliable mode only; failure to establish reliable link.
Inactivity Timeout	Default is 0 or disabled; select for disabled or 1 to 255 minutes (S-register 8).
Protocol Retry Limit Exceeded	12 retransmissions of the frame.
Minimum DCE Speed	A connection occurred at a rate less than minimum.
Security Password Failure	Maximum password entry attempts exceeded.
Security Callback	Security callback is enabled and a new remote connection is established. The modem disconnects and places a call to the programmed number.

Table 3-1. Reasons for Call Termination (Continued)

Condition	Description
Signal Quality	Leased line operation with dial backup enabled; extended loss of carrier or 4 unsuccessful retrains in 3 minutes causes dial backup.
Test Mode entered	Certain test modes require call termination.
Modem power is turned off.	

The liquid-crystal display (LCD) front panel provides easy real-time access to modem configuration and status. You can use the LCD at any time to modify modem options or to get information about modem operation and status. All of the major modem options can be controlled through the LCD interface without an external terminal or phone line connection. Operation of the LCD can be secured using a password protection feature. A remote modem can even be configured using the local LCD, through the use of the front panel remote configuration feature.

LED Descriptions

The V.3600 LED indicator functions are as follows:

- TR (Terminal Ready). TR lights when the DTE asserts Data Terminal Ready. This signal is input on pin 20 (CCITT V.24/108.2).

- CS (Clear to Send). CS lights when the modem is ready to send data to the DTE. This signal is output on pin 5 (CCITT V.24/106).

- RS (Request to Send). RS lights when the DTE is ready to send data to the modem. This signal is input on pin 4 (CCITT V.24/105).

- CD (Carrier Detect). CD lights when the received audio carrier signal is detected or, if enabled, when error control protocol negotiation is complete. This signal is output on pin 8 (CCITT V.24/109).

- RD (Received Data). RD lights for a data space condition at the receive data output, indicating receive data output activity. This signal is output on pin 3 (CCITT V.24/104).

- TD (Transmit Data) TD lights for a data space condition at the transmit data input, indicating transmit data input activity. This signal is input on pin 2 (CCITT V.24/103).

LCD Menus

The V.3600 has seven main LCD menus that support modem operations.

Table 4-1 lists them, in the following sequence:

- MODEM STATUS
- DIAL STORED NUMBER
- DISPLAY STATUS
- SELECT TEST
- MODIFY CONFIGURATION
- CHANGE PHONE NUMBERS
- FRONT PANEL FEATURES

LCD Menu Operation

The LCD menu is shown in Table 4-1, as follows:

- The first column lists the seven main menu categories.
- The second column is the submenu, listing functions for each category in the main menu.
- The third column lists specific items for submenu functions.
- The fourth column lists option choices or status for the specific items in the third column.
- The fifth and sixth columns in the table show associated AT commands and S-registers as a cross reference.

Each column item has a corresponding header in the previous column. If an option setting is selected or if all settings have been scrolled through, the display returns to the header.

Because of the menu structure and option choices, not all main menus use all four columns in Table 4-1. However, option selection and sequence are the same.

While operating in the option menu, pressing NO scrolls vertically down the columns; pressing YES advances horizontally across the columns. However, responding to the LCD prompt is the best way to reach an option. If NO is pressed and held, the LCD scrolls through the menus. Press the TALK/DATA button to return to the previous menu.

Table 4-1. LCD Menu Option Selection

	Main Menu	Submenu	Submenu Item	Item Option	AT Com.	S-Reg
1	MODEM-STATUS	V.34 33600 IDLE *Shows the current modulation, bit rate, and modem status.*		(Press NO to advance to MAIN 2)	S91 S67	
Main Menu		Submenu	Submenu Item	Item Option	AT Com.	S-Reg
2	DIAL STORED-NUMBER?		DIAL #1-9	YES, NO	DSn (n=1-9)	---
3	DISPLAY STATUS? *(status only)*	DTE SIGNALS	QM ON/OFF DSR ON/OFF OH ON/OFF RI ON/OFF	DISPLAY STATUS	---	---
		PROTOCOL*	NONE MNP 2, 3, 4, 5 LAPM	DISPLAY STATUS	---	---
		COMPRES-SOR*	NONE MNP 5, V.42b	DISPLAY STATUS	---	---
		CARRIER DESCRIP-TIONS*	RECEIVE LEVEL NEAR END ECHO LEVEL FAR END ECHO LEVEL FAR END ECHO DELAY FREQUENCY TRANSLATION BAUD RATE RX BIT RATE TX BIT RATE	DISPLAY STATUS	---	---
4	SELECT TEST?	(Offline test only)	LOCAL ANALOG LOOP LOCAL ANALOG LOOP WITH TP LOCAL DIGITAL LOOP †	INITIATE, EXIT INITIATE, EXIT INITIATE, EXIT	&T1 &T8 &T3	S16 S16 S16
		(Online test)	DISPLAY STATUS	I5		
		LAST DIS-CONNECT REASON				

* When modem is not online, the display flashes and shows the status from the last connection.

† Modem must be online with protocols disabled.

Table 4-1. LCD Menu Option Selection (Continued)

Main Menu	Submenu	Submenu Item	Item Option	AT Com.	S-Reg
4, SELECT TEST? (continued)	(Online test continued)	REMOTE DIGITAL LOOP †	INITIATE, EXIT	&T6	S16
		REMOTE DIGI TAL LOOP WITH TP †	INITIATE, EXIT	&T7	S16
		TEST PATTERN†	INITIATE, EXIT	%T	...
5 MODIFY CONFIGU-RATION?	CHANGE MODEM OPTIONS?	CHANGE LEASED/ DIAL LINE?	2 WIRE/ 4 WIRE	&L1, &L	S27
		CHANGE MODULATION?	AUTO-MODE	*MM	S88
			V.21	*MM1	
			BELL 103	*MM2	
			B212A	*MM4	
			V.22 bis	*MM5	
			V.27 ter *	*MM6	
			V.29 *	*MM8	
			V.33 *	*MM10	
			V.32bis	*MM11	
			V.34	*MM12	
		CHANGE MAX DCE RATE?	33600	%B18	S69
			31200	%B17	
			28800	%B16	
			26400	%B15	
			24000	%B14	
			21600	%B13	
			19200	%B12	
			16800	%B11	
			600	%B10	
			14400	%B9	
			12000	%B8	
			7200	%B7	
			9600	%B6	
			9600U **	%B5	
			4800	%B4	
			2400	%B3	
			1200	%B2	
			300	%B1	
			DTE SPEED	%B	

*Lease line only.
** 9600U is only valid for V.32 bis modulation.
† Modem must be online with protocols disabled.

Table 4-1. LCD Menu Option Selection (Continued)

Main Menu	Submenu	Submenu Item	Item Option	AT Com.	S-Reg
5 MODIFY CONFIGU-RATION? (continued)	CHANGE MODEM OPTIONS? (continued)	CHANGE MIN DCE RATE?	33600	%L18	S69
			31200	%L17	
			28800	%L16	
			26400	%L15	
			24000	%L14	
			21600	%L13	
			19200	%L12	
			16800	%L11	
			600	%L10	
			14400	%L9	
			12000	%L8	
			7200	%L7	
			9600	%L6	
			9600U **	%L5	
			4800	%L4	
			2400	%L3	
			1200	%L2	
			300	%L1	
			DTE SPEED	%L	
		CHANGE V.34 RATE THRESH-OLD?	LOW BER	*TH	...
			MED BER	*TH1	
			HIGH BER	*TH2	
		V.34 ASYM RATES	ENABLE	*AS1	S96
			DISABLE	*AS	
		NORMAL ORIGINATE FORCED ANSWER*	NORMAL	*OR	S14
			ORIG.	*OR1	
			FORCED ANS.		
		V.32 FAST TRAIN	ENABLE	*FT1	S29
			DISABLE	*FT	
		V.22 GUARD TONE	DISABLE	&G	S23
			550 Hz	&G1	
			1800 Hz	&G2	
		AUTO RETRAIN	ENABLE	*E1	S60
			DISABLE	*E	
		SQ AUTO RATE	HIGH BER	%R3	S53
			MED BER	%R2	
			LOW BER	%R1	
			DISABLED	%R	
		TRANSMIT CLOCK SELECT	INTERNAL	&X	S27
			EXTERNAL	&X1	
			RECEIVE	&X2	

*Lease line only.
** 9600U is only valid for V.32 bis modulation.

Table 4-1. LCD Menu Option Selection (Continued)

Main Menu	Submenu	Submenu Item	Item Option	AT Com.	S-Reg
5 MODIFY CONFIGU-RATION? (continued)	CHANGE MODEM OPTIONS? (continued)	DIAL TRANSMIT LEVEL	-9 dBm to -21 dBm	*TDn	S51
		RING FREQUENCY LIMIT	ENABLE / DISABLE	*RL1 / *RL	--
		LEASE TRANS-MIT LEVEL*	0 to -21 dBm	*TLn	S52
		LINE CURRENT DISCONNECT†	OFF / SHORT / LONG	*LC, *LC1, *LC2	S32
		LONG SPACE DISCONNECT†	ENABLE / DISABLE	Y1 / Y	S21
		DIAL BACKUP*	MANUAL / AUTO-MATIC	*DB / *DB1	S32
		LOOKBACK TIME*	0 DIS-ABLED to 255 MINUTES	--	S28
	CHANGE PROTOCOL OPTIONS?	LAPM PROTOCOL	ENABLE / DISABLE	\N4, \N5, \N6, \N7 / \N, \N1, \N2, \N3	S70
		MNP PROTOCOL	ENABLE / DISABLE	\N2, \N3, \N6, \N7 / \N, \N1, \N4, \N5	S70
		PROTOCOL FALLBACK	ENABLE / DISABLE	\N3, \N5, \N6, \N7 / \N, \N1, \N2, \N4	S70
		DATA COM-PRESSION	DISABLE / NORM / TX / RX	%C / %C1 / %C2 / %C3	S56

* Lease line only.
† Dial line only.

Table 4-1. LCD Menu Option Selection (Continued)

Main Menu	Submenu	Submenu Item	Item Option	AT Com.	S-Reg
5 MODIFY CONFIGU-RATION? (continued)	CHANGE PROTOCOL OPTIONS? (continued)	DTE SPEED	DTE=DCE / CONSTANT / DTE	\U1 / \U	S70
		DTE FLOW CONTROL	DISABLE / XON/XOFF / CTS / RTS/CTS	\Q0 / \Q1 / \Q2 / \Q3	S54
		DCE FLOW CONTROL	DISABLE / XON/XOFF / CTS	\Q4 / \Q5 / \Q6, \Q7	S54
		XON/XOFF PASS THROUGH	ENABLE / DISABLE	\X1 / \X	S54
		INACTIVITY TIMER	OFF, 15, 30, 45, 60, 75, 90 MIN	\Tln	S58
		BREAK OPTION	0, 1, 2, 3, 4, 5	\K, \K1, \K2 \K3, \K4, \K5	S59
		V.42 FAST DETECT	ENABLE / DISABLE	\M1 / \M	S70
	CHANGE DTE OPTIONS?	DATA OPERATION	SYNC / ASYNC	&M1, 2, 3, 4, 5, 6 / &M	S27 S30
		DTE RATE (Async)	300, 600,1200, 2400, 4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, 28800, 31200, 33600, 38400, 57600, 115200	--	S80
		CHAR SIZE (Async)	7 BIT / 8 BIT	--	S61
		PARITY (Async)	NO, EVEN, ODD	--	S61

Table 4-1. LCD Menu Option Selection (Continued)

Main Menu	Submenu	Submenu Item	Item Option	AT Com.	S-Reg
5 MODIFY CONFIGU-RATION? (continued) c o n t	CHANGE DTE OPTIONS? (continued)	DIAL METHOD	ASYNC DTR, MANUAL, V.25 BISYNC, V.25 SDLC ASYNC	&M1, &M2 &M3 &M4 &M5 &M6	S27 S30
		CHARACTER SET	ASCII, EBCDIC	---	
		AT COMMAND SET	ENABLE DISABLE	*NT1 *NT	S29
		CHARACTER TYPE (V.25 only)	ASCII, EBCDIC	---	S30
		SDLC DATA FORMAT	NRZ, NRZI	---	S30
		DTR STATE	IGNORE RECALL CMD DISCON-NECT RESET	&D &D1 &D2 &D3	S21
		DSR STATE	NORMAL FORCED HIGH OFF 5 SEC ON DISCON-NECT FOLLOWS OH	&S1 &S &S2 &S3	S21
		DCD STATE	NORMAL FORCED HIGH OFF 5 SEC ON DISCON-NECT FOLLOWS	&C1 &C &C2 &C3	S21
		CTS STATE	NORMAL FORCED HIGH CTS FOLLOWS DCD CTS=RTS REMOTE RTS	&R &R1 &R2 &R9	S21 S72

Table 4-1. LCD Menu Option Selection (Continued)

Main Menu	Submenu	Submenu Item	Item Option	AT Com.	S-Reg
5 MODIFY CONFIGU-RATION? (continued) c o n t	CHANGE DTE OPTIONS? (continued)	RTS/CTS DELAY	0 to 150 ms (10 ms)	---	S26
	CHANGE TEST OPTIONS?	DTE COM-MANDED FALLBACK	ENABLE DISABLE	*FB1 *FB	S53
		OPTIONS RES/ RETND AT DISC	RESTORED RETAINED	*RO1 *RO	S29
		BILATERAL DIGITAL LOOP	ENABLE DISABLE	*DG1 *DG	S34
		DTE LOCAL TEST	ENABLE DISABLE	*LA1 *LA	S34
		DTE REMOTE TEST	ENABLE DISABLE	*RD1, *RD	S34
		REMOTE COM-MANDED	ENABLE DISABLE	&T4 &T5	S23
		TEST TIMEOUT	OFF, 60, 120, 180. 240 SEC	---	S18
	CHANGE DIAL OPTIONS?	DIAL TYPE	PULSE, TONE	P, T	S14
		AUTODIAL #	OFF, 1 - 9	*AUn (n=1-9)	---
		DIAL TONE	BLIND DIAL WAIT FOR DIAL TONE	X, X1, X3 X2, X4	S22
		WAIT DELAY (Blind Dial)	1, 2, 3, 4, 8, 16, 32 SEC	---	S6
		PAUSE DELAY	1, 2, 3, 4, 8. 16, 32 SEC	---	S8
		CALL TIMEOUT	15, 30, 45, 60, 75, 90, 105, 120 SEC	---	S7
		ANSWER RING #X	1, 2, 4, 8, 16	---	S0
		AUTOCALLBACK	ENABLE, DISABLE	---	S72
	CHANGE SPEAKER OPERATION?	VOLUME CONTROL	LOW HIGH	L1, L2 L3	S22

Table 4-1. LCD Menu Option Selection (Continued)

Main Menu	Submenu	Submenu Item	Item Option	AT Com.	S-Reg
5 MODIFY CONFIGU-RATION? (continued)	CHANGE SPEAKER OPERATION? (continued)	SPEAKER CONTROL	ON UNTIL CARR DETECT	M1	S22
			ALWAYS ON	M2	---
			OFF WHILE DIALING	M3	
			ALWAYS	M4	
			OFF		
	LOAD/STORE OPTION SET?	LOAD FACTORY OPTION	NO. 1-9	&Fn (n=1-9)	---
		LOAD USER OPTION SET	1	Z0	---
			2	Z1	
		STORE PRESENT OPTIONS	1	&W	---
			2	&W1	
		USER OPTION AT RESET	1	&Y	---
			2	&Y1	
6 CHANGE PHONE NUMBERS?		PHONE NUMBER	ENTER NUMBER 32 digits	&Zx=n (n=phone # and modifi-ers) *CNx.n	---
7 FRONT PANEL FEA-TURES?		CHANGE RMT PASSWORD?	ENTER PASS-WORD	%P	---
		ENTER REMOTE CONFIGURA-TION	ENTER REM CFG PASS-WORD	%T	---
		EXIT REMOTE CONFIGURA-TION	EXIT	&T	---
		CHANGE FRONT PANEL PASS-WORD	ENTER PASS-WORD * ACTIVATE SECURITY	---	---

*Password of 0000 disables front panel security.

Front Panel Security

The Front Panel Security feature provides password protection for front panel menu access. The modem is shipped from the factory with this feature disabled.

The Front Panel Security password is a 4-digit string that can be set to any combination of digits from "0000" to "9999". Selecting a password of "0000" disables Front Panel Security; any other password enables it.

IMPORTANT: Without your password, you cannot access front panel configuration. Keep your password in a safe place. If you forget your Front Panel Security password, contact Technical Support. Refer to "Calling Technical Support" section on page 12-2.

When this feature is enabled, it can be activated in these ways:

• Explicitly, by a front panel screen under Main Menu #7
• By the modem, when no front panel buttons have been pressed for 3 minutes

When Front Panel Security is activated, the front panel menu returns to Main Menu #1 and the front panel is secured.

In secured state, the Main Menu #1 screen continues to maintain modem status, but a password must be entered before other front panel screens may be accessed. Pressing any front panel button causes the modem to prompt for the front panel password. After the password has been entered, a message briefly displays the result of the password validation process and, depending on the result, Front Panel Security either becomes inactive or returns to its active state.

During password entry, the front panel buttons are operate as follows:

• Pressing NO makes the character at the cursor change to the next valid password character.
• Pressing YES while the cursor is on any of the first three password characters makes the cursor advance to the next password character. When the cursor is on the last password character, pressing YES makes the modem accept the displayed password.
• Pressing TALK/DATA while the cursor is on the first password character aborts password entry. When the cursor is on any other character, this button makes the cursor move to the first character.