



**COMSPHERE 3800
SERIES MODEMS
MODEL 3830**

QUICK REFERENCE

Document No. 3830-A2-GL10-00

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COMSPHERE 3800 Series Modems Model 3830 Quick Reference

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Model 3830 Modem Package

After opening the modem's package, check for damage and verify that the following items are present:

- Model 3830 modem
- Power transformer
- One 6-position, 4-wire modular cord
- Two ferrite chokes and cable ties

If any hardware components are damaged, notify your service representative. See the *Warranty, Sales, and Service Information* section in the front of this document.

Customer-Supplied Equipment

The following customer-supplied equipment is required to complete a data communications system using Model 3830 modem:

- A DTE with an available EIA-232-D serial port.
- A standard EIA-232-D male-to-female cable with a male DB-25-S connector at one end to attach to the modem.
- An ac line cord with an IEC 320 connector and appropriate wall plug if using the 220-240V power transformer.
- One of the following modular dial or leased network interfaces:
 - RJ11C for dial permissive applications
 - JM8 for leased-line applications only

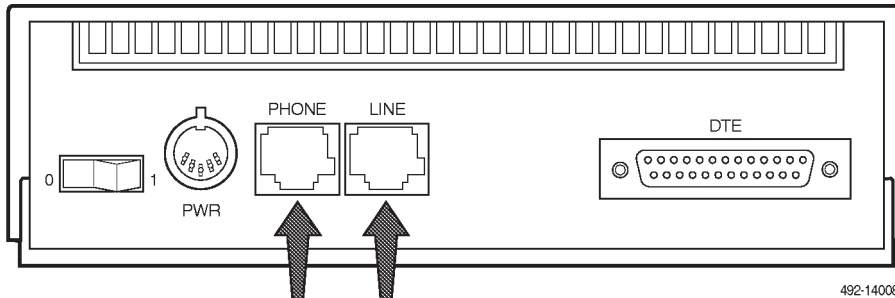
Model 3830 Installation

Before installing your modem, read the *Important Safety Instructions* on page 15.

Make sure your installation site is clean and well-ventilated. Allow space around the modem for installing cables and telephone cords, and make sure the modem is located within reach of the ac power outlet. The distance between your modem and DTE should be minimized if DTE data rates exceed 19,200 bps. Also, low capacitance cables may be necessary for speeds greater than 19,200 bps or distances greater than 50 feet.

The rear panel of the Model 3830 modem has the following switches and connectors:

- An ON/Off power switch.
- A 5-pin DIN type power receptacle for ac power transformer.
- An 8-pin modular keyed jack for external telephone set use only.
- An 8-pin modular keyed jack for dial (PSTN) lines or 2-wire leased lines.
- A 25-pin DB-25-S receptacle for DTE interface.



6-POSITION,
4-CONDUCTOR PLUG
FOR TELEPHONE SET



6-POSITION, 4-CONDUCTOR PLUG FOR
PERMISSIVE DIAL NETWORK OPERATION
(CONNECTS WITH RJ11C TYPE JACK)

– OR –

2-WIRE LEASED-LINE NETWORK OPERATION
(CONNECTS WITH 6-POSITION CENTER PAIR
LEASED JACK)

CAUTION

Pins 3 and 6 of the modem's 8-position dial jack are reserved for MI/MIC dialing. To avoid equipment damage and violation of FCC Part 68 Rules, do not connect a 6-position, 4-conductor cable to a USOC RJ14C jack. This jack has a secondary dial line on Pins 2 and 5.

In this case, a 2-conductor cable, using Pins 3 and 4 of a 6-position plug, can be purchased from your local electronics store.

DTE Connection

► Procedure

To connect the EIA-232-D cable and ferrite choke from the modem to the DTE:

1. Make sure the modem's rear panel power switch is Off.
2. Connect the DB-25-P (plug) connector on the cable to the DB-25-S (socket) connector labeled DTE on the modem's rear panel. Use a small screwdriver to fasten the cable to the modem.
3. Connect the DB-25-P connector on the cable to the DB-25-S connector on the DTE. Use a small screwdriver to fasten the cable to the DTE.

To ensure compliance with FCC Part 15 Regulations, a ferrite choke must be installed on the DTE (EIA-232-D interface) cable.

► Procedure

To install the ferrite choke on the DTE cable:

1. Open the ferrite choke, place it around the DTE cable as close as possible to the connector attached to the modem, and snap the ferrite choke shut.
2. Install a cable tie behind the ferrite choke to prevent it from sliding along the cable.

Dial-Line Connection

► Procedure

To connect a Model 3830 to the dial network interface:

1. Insert the 6-position, 4-conductor modular plug into the jack labeled LINE.
2. Insert the other end of the modular cord into the dial network interface.

2-Wire Leased-Line Connection

► Procedure

For 2-wire leased line connection to a JM8 network interface, refer to Appendix C, *Pin Assignments*, in the User's Guide. To connect a Model 3830 modem to the 6-pin, center pair, leased-line network interface:

1. Insert the 6-position, 4-conductor modular plug into the jack labeled LINE.
2. Insert the other end of the modular cord into the leased-line network interface.

Telephone Connection

► Procedure

To connect the modem to a telephone:

1. Insert the 6-position, 4-conductor modular plug into the jack labeled PHONE.
2. Insert the other end of the modular cord into the telephone.

AC Power Transformer Connection

► Procedure

To connect the modem to an ac power outlet:

1. Make sure the modem's power switch is in the Off position.
2. Insert the power transformer's 5-pin DIN male connector into the modem's rear panel ac power receptacle.
3. For the 115V power transformer, insert the power transformer into a grounded ac power outlet.
For the 220–240V power transformer, insert the line cord's outlet connector into the power transformer's IEC 320 power outlet. Next, insert the line cord wall plug into the appropriate grounded ac outlet.

To ensure compliance with FCC Part 15 Regulations, a ferrite choke must be installed on the power transformer cable.

► Procedure

To install a ferrite choke on the power transformer cable:

1. Open the ferrite choke, place it around the power transformer cable as close as possible to the connector attached to the modem, and snap the ferrite choke shut.
2. Install a cable tie behind the ferrite choke to prevent it from sliding along the cable.

Communications Software Installation

A personal computer commands and controls a dial modem through communications software. This software, which is installed on the PC, uses the AT command set to send instructions to the modem.

The Model 3830 can be used with any standard communications software. Many of the following procedures require that your communications software be running so you can pass commands to the modem.

Modem Power-Up

Once your modem is properly connected to the DTE, dial or leased lines, and ac outlet, press the modem's rear panel power switch to the ON position. The modem begins a power-up self-test in which all front panel LEDs momentarily light (note that this also occurs on a reset of the modem), and the Power LED remains ON. The state of other LEDs depends on your modem's configuration.

On initial power-up, the modem is in Command mode. To verify that the modem is connected and functioning properly, enter the following:

Type: AT
Press: Enter

The screen displays OK.

Selecting Factory Configuration Options

After the modem passes the power-up self-test, it can be configured for operation using one of two factory preset configurations.

These factory preset templates contain the most commonly used configuration options (straps) for Asynchronous Dial and UNIX hardware network configurations. Your modem is shipped from the factory with the Async Dial default configuration options stored in memory. If UNIX Dial is more appropriate for your configuration, then you must change the factory setting as described as follows.

NOTE:

If you have already changed certain configuration options, you may have lost AT command control. For example, operating in Synchronous mode or disabling AT commands results in an inability to change configuration options. To regain AT command control, refer to *Recovering AT Commands* for these procedures.

► Procedure

To change a factory template:

1. Use the AT&F&W command to load the appropriate factory configuration to the appropriate storage area. Enter the following:

Type: AT&F y &W n

where: y is one of the following factory configurations:

0 = Async Dial

3 = UNIX Dial

5 = Cellular (Mobile) (Valid only if ETC is installed)

6 = Cellular (PSTN) (Valid only if ETC is installed)

where: n is one of the following configuration areas:

0 = Active (Saved)

1 = Customer 1

2 = Customer 2

NOTE:

These three configuration areas are nonvolatile memory locations. Active (Saved) contains the most recently saved changes to any configuration options. In the event of power loss, the modem retrieves these configuration options. Customer 1 and Customer 2 are user-defined configuration areas.

2. Press Enter. The selected factory configuration is saved.

NOTE:

When configuring your modem, keep a record of its configuration options as a future reference in case the modem must be replaced.

Recovering AT Commands

AT commands are issued from asynchronous terminals and personal computers. Certain dialing methods, such as V.25bis and synchronous operation, disable the use of AT commands and place the modem into a state known as Dumb mode. The Model 3830 is capable of normal operation when in Dumb mode. However, if the setting of a configuration option must be changed, it can only be accomplished using an AT command.

The AT Recovery command (AT***) places the modem into a temporary state that restores AT commands. When in this state, the modem's previous settings are retained except for the following configuration options:

- The DTE Dialer Type configuration option (&M and &Q) is set to AT
- The Async/Sync Mode configuration option (&M and &Q) is set to Async
- The DSR Control configuration option (&S) is set to Forced On
- The LSD Control configuration option (&C) is set to Forced On

If these settings are not appropriate, then change them to a setting compatible with your current application.

The procedures for an AT recovery using an asynchronous terminal or personal computer are listed in the following section. Read through these procedures before performing a recovery:

► Procedure

1. Turn the modem Off and then ON. The modem performs a power-up self-test in which all LEDs light. While this is running, repeatedly press the A key of your DTE's keyboard (or keep the key depressed if your keyboard automatically repeats characters that way). Keep doing this until A's (or a's) appear on your DTE screen. (You may use all uppercase or all lowercase characters.)

At least three consecutive A's must be entered within a 2-second time interval.

If these characters are not echoed back to the DTE screen after the power-up self-test is complete, then the modem is still in Dumb mode and maintains its current configuration. Turn the modem Off and then ON again, and repeat Step 1.

2. Once the characters are echoed back to the DTE,

Type: T***

(The case of this character must be consistent with the case used in Step 1. Mixed case prefixes such as aT or At are not recognized.)

This must be entered within 10 seconds after receiving the echoed characters.

Press: Enter

The screen displays OK.

The modem is now in AT Recovery mode, and remains in this state until a Save or power reset occurs. While in this mode, you can use AT commands to make any necessary changes to configuration options.

Keep in mind that the &C command is changed to Forced On (&C0), the &M and &Q commands are changed to Async mode with AT commands enabled (&M0 and &Q0), and the &S command is changed to Forced On (&S0). If these settings are not appropriate, then reset them to a desired choice before exiting AT Recovery mode.

3. To save changes, use the &W command:

Type: AT&W*n*

where: *n* is one of the following configuration areas:

0 = Active (Saved)

1 = Customer 1

2 = Customer 2

Press: Enter

The modem exits AT Recovery mode and returns to its previous application environment.

Initialization Strings

An initialization string contains several AT commands that are entered at once to program the modem for a specific application. The factory default configuration options are suitable for most applications.

The following initialization strings identify essential AT commands that directly impact modem operation for a particular application. Replace the characters *n* with a value suitable for your environment. If you need to further modify these strings for your application, make sure additional commands are inserted somewhere in the middle of the initialization string. Whenever an &L command is used, it must appear at the end of an initialization string.

Table 1. Initialization Strings for Special Applications

Application	Initialization String
V.25bis HDLC	AT&F &D1 &S1 &M234 &W
V.25bis Bisynchronous	AT&F &D1 &S1 &M233 &W
Synchronous Leased Line	AT&F &D1 &S1 S44= <i>n</i> S45= <i>n</i> S82= <i>n</i> &M1 &L <i>n</i> &W
AT&T Exclusive Dialing for DATAKIT™	AT&F &C5 &D1 &S3 &R0 \D3 \Q1 \G1 S85=1 &M235 &W

AT COMMANDS

Bold text indicates Async Dial factory defaults.

AT	Attention Command Prefix/Autobaud Rate. Indicates a command string has started and determines the DTE's data rate and parity.
A/	Repeat Last Command. Re-executes last command string. (Not to be preceded with AT or followed by pressing Enter.)
A	Answer Mode. Goes off-hook and attempts to establish a connection without waiting for a ring.
Bn	<i>ITU-T/Bell Mode</i>
B0	V.21 or V.22 (300 or 1200 bps).
B1	Bell 103 or 212A (300 or 1200 bps).
Dn	Dial. Dials the telephone number entered for <i>n</i> .
DS= <i>n</i>	Dial Stored Number. Dials the number stored in location <i>n</i> (1–10).
En	<i>Command Character Echo</i>
E0	Disables echo to the DTE.
E1	Enables echo to the DTE.
H0	Modem goes on-hook.
H1	Modem goes off-hook.
I0	Displays product code—144.
I1	Displays 3-digit firmware revision number.
I2	Performs an EPROM check.
I3	Displays modem's serial number.
I4	Displays modem's model number.
I5	Displays part number of circuit card.
I6	Displays firmware release number.
I9	(same as I1)
I10= <i>n</i>	Changes value of product code (0=144, 1=240, 2=480, 3=960, 4=120).
I11	Firmware checksum.
I19	Displays entire firmware revision number.
L <i>n</i>	<i>Speaker Volume</i>
L0,L1	Selects low volume.
L2	Selects medium volume.
L3	Selects high volume.
M <i>n</i>	<i>Speaker ON/Off Control</i>
M0	Speaker always Off.
M1	Speaker ON until carrier signal becomes active.
M2	Speaker always ON.
O	Returns modem to Data mode from online Command mode.
P	Enables Pulse Dial mode.

AT COMMANDS (*continued*)

<i>Qn</i>	<i>Result Codes</i>
Q0	Enables result codes. Refer to Result Codes section.
Q1	Disables result codes.
Q2	Enables originate modem to send result codes to the DTE. Required for most UNIX applications.
S <i>r</i> ?	Displays value of S-Register (where <i>r</i> is the register number).
S <i>r</i> = <i>n</i>	Change S-Register. Changes the contents of the S-Register (where <i>r</i> is the register number and <i>n</i> is the assigned value).
T	Enables Tone Dial mode.
<i>Vn</i>	<i>Result Code Format</i>
V0	Displays as digits (Numbers 1).
V1	Displays as text.
V2	Displays as digits (Numbers 2).
<i>Xn</i>	<i>Extended Result Codes; Dial Tone Detect; Busy Tone Detect</i>
X0	Disables extended result codes 5–16, dial tone detect, and busy tone.
X1	Enables extended result codes 5–16, disables dial tone detect and busy tone detect. Refer to <i>Result Codes</i> section.
X2	Enables extended result codes 5–16, dial tone detect, and disables busy tone detect.
X3	Enables extended result codes 5–16, disables dial tone detect and enables busy tone detect. Refer to <i>Result Codes</i> section.
X4	Enables extended result codes 5–16, dial tone detect, and busy tone detect. Refer to Result Codes section.
X5	Adds EC suffix to extended result codes (20–27) if error control is used, enables dial tone detect and busy tone detect.
X6	Adds either V.42 or MNP suffix to extended result codes (20–27) if data compression is used, enables dial tone detect, and busy tone detect.
X7	DTE rate appears in CONNECT message instead of line rate, enables dial tone detect and busy tone detect. Refer to <i>Result Codes</i> section.
<i>Yn</i>	<i>Long Space Disconnect</i>
Y0	Disable.
Y1	Enable.
<i>Zn</i>	<i>Reset and Load Active</i>
Z0	Loads contents of Active (Saved) into Active (Operating).
Z1	Loads contents of Customer 1 into Active (Operating).
Z2	Loads contents of Customer 2 into Active (Operating).

AT COMMANDS (continued)

Z3	Loads contents of Active (Saved) into Active (Operating) and performs a reset.
Z9	Performs a full modem reset.
&Cn	<i>LSD Control</i>
&C0	Forced On. Forces LSD ON at all times.
&C1	Standard RS232. LSD is ON when the remote modem's carrier signal is detected. LSD is Off when carrier signal is not detected.
&C2	Wink When Disc. LSD, normally forced ON, turns Off for approximately 1 to 2 seconds upon disconnect.
&C3	Follows DTR. State of LSD follows state of DTR.
&C4	Simulated Control Carrier. State of LSD follows state of remote modem's RTS.
&C5	=DTR/DiscOff. State of LSD follows state of DTR except upon a disconnect where DTR remains ON and LSD turns Off. DTR must then toggle Off and ON to turn LSD ON. Required for AT&T DATAKIT dial-out applications.
&C6	Bridge Retrain. LSD behaves as in Standard RS232, except that it is turned Off when retrain lasts longer than 10 seconds, and ON when no retrain is detected for 10 seconds.
&Dn	<i>DTR Action</i>
&D0	Ignore. Modem ignores the DTR (Data Terminal Ready) signal and treats it as always ON.
&D1	Off=Command Mode. Modem enters online Command mode when DTR is lowered.
&D2	Standard RS232. DTR signal is controlled by the DTE.
&D3	Off=Reload Straps. Modem loads Active (Operating) area with Active (Saved) area when DTR is lowered.
&D4	Controls On-Hook. Modem does not disconnect until DTR lowered by DTE.
&Fn	<i>Loads Factory Configuration</i>
&F0	Loads Async Dial factory configuration options into Active (Operating) configuration area.
&F3	Loads UNIX Dial factory configuration options into Active (Operating) configuration area.
&F5	Cellular (Mobile). Valid only if ETC is installed.
&F6	Cellular (PSTN). Valid only if ETC is installed.
&Gn	<i>V.22bis Guard Tone</i>
&G0	Disables guard tone.
&G1	Sets guard tone to 550 Hz.
&G2	Sets guard tone to 1800 Hz.

AT COMMANDS (continued)

&In	<i>Dial Transmit Level</i>
&I10	-10 dBm.
&I11	-11 dBm.
•	•
•	•
&I32	-32 dBm.
&I99	ETC 1.0 (Cellular). Valid only if ETC is installed.
&I100	ETC 1.1 (Cellular). Valid only if ETC is installed.
&Jn	<i>Dial Transmit Level Type</i>
&J0	Modem sets dial transmit level to Permissive mode at -9 dBm.
&Ln	<i>Leased-Line Mode</i>
&L0	Disables leased-line operation.
&L1	2-wire originate leased-line operation.
&L3	2-wire answer leased-line operation.
&Mn,&Qn	<i>Async/Sync Mode and DTE Dialer Type</i>
&M0,&Q0	Modem operates in Asynchronous mode and uses AT command protocol.
&M1,&Q1	Modem operates in Synchronous mode and uses AT command protocol.
&M2,&Q2	Modem operates in Synchronous mode and dials telephone number stored in directory location 1 when DTR signal turns Off and then ON.
&M3,&Q3	Modem operates in Synchronous mode and uses AT command protocol.
&Q4	Modem operates in Asynchronous mode and uses AT Command protocol; Hayes AutoSync is enabled.
&M231, &Q231	Modem operates in Asynchronous mode; the DTE Dialer Type is disabled.
&M232, &Q232	Modem operates in Asynchronous mode; V.25bis Async dialing is enabled.
&M233, &Q233	Modem operates in Synchronous mode; V.25 Bisync dialing is enabled.
&M234, &Q234	Modem operates in Synchronous mode; V.25bis HDLC dialing is enabled.
&M235, &Q235	Modem operates in Asynchronous mode; AT&T Exclusive dialing is enabled.
&M236, &Q236	Modem operates in Synchronous mode; the DTE Dialer Type is disabled.
&Rn	<i>RTS Action</i>
&R0	Standard RS232. RTS action is controlled by DTE.
&R1	Ignores RTS. Modem ignores RTS signal and treats it as always ON.
&R2	Simulated Control Carrier. State of RTS follows state of LSD.

AT COMMANDS (continued)

&Sn	<i>DSR Control</i>
&S0	Forced On. Forces DSR signal ON.
&S1	Standard RS232. Modem controls DSR signal.
&S2	Wink When Disc. DSR signal turns Off for approximately 1 to 2 seconds upon disconnecting.
&S3	Follows DTR. Modem sends DSR to DTE when it receives DTR from DTE.
&S4	On Early. DSR is Off when modem is in idle state. DSR goes ON when modem enters Data mode.
&S5	Delay to Data. DSR does not turn ON until the modem enters Data mode.
&S6	Dial Backup toggle.
&Tn	<i>Tests</i>
&T0	Stops any test in progress.
&T1	Starts a Local Analog Loopback test (V.54, L3).
&T2	Transmits and receives a 511 BERT pattern.
&T3	Starts a Local Digital Loopback test.
&T4	Accepts request from remote modem for a Remote Digital Loopback test.
&T5	Denies request from remote modem for a Remote Digital Loopback test.
&T6	Starts a Remote Digital Loopback test (V.54, type L2).
&T7	Starts a Remote Digital Loopback test with a Pattern (V.54, type L2).
&T8	Starts a Local Analog Loopback test with a Pattern (V.54, type L3).
&T9	Starts a self-test.
&Vn	<i>View Configuration Options</i>
&V0	Displays Active (Operating) configuration options.
&V1	Displays Active (Saved) configuration options.
&V2	Displays Customer 1 configuration options.
&V3	Displays Customer 2 configuration options.
&V4	Displays telephone numbers stored in directory locations 1–10.
&Wn	<i>Write (Save to Memory)</i>
&W0	Saves current configuration options in Active (Operating) to Active (Saved).
&W1	Saves current configuration options in Active (Operating) to Customer 1.
&W2	Saves current configuration options in Active (Operating) to Customer 2.
&Xn	<i>Transmit Clock Source</i>
&X0	Modem provides internal clock source for synchronous data (Pin 15).
&X1	Modem uses external source (Pin 24) for clock for synchronous data.
&X2	Modem uses received signal as clock source for synchronous data.

AT COMMANDS (continued)

&Zn=x	Modem stores telephone number <i>x</i> (and any dial modifiers) in directory location <i>n</i> (1–10). For example, the command AT&Z1=555-1234 stores the number 5551234 in directory location 1. To clear a telephone number from a memory location, issue &Zn= <i>x</i> without entering a telephone number.
\An	<i>Maximum Frame Size</i>
\A0	64
\A1	128
\A2	192
\A3	256
\A4	32
\A5	16
\Cn	<i>Error Control Negotiate Buffer</i>
\C0	Data is not buffered during handshaking sequence.
\C1	Data is buffered up to 4 seconds during handshaking sequence.
\C2	Data is not buffered during handshaking sequence; however, the modem switches to Buffer mode when it receives an error control fallback character.
\Dn	<i>CTS Control</i>
\D0	Forced On. CTS is forced ON.
\D1	Standard RS232 operation.
\D2	Wink When Disc. CTS turns Off for approximately 1 to 2 seconds upon disconnecting.
\D3	Follows DTR. The state of CTS follows the state of DTR.
\Gn	<i>Modem-to-Modem Flow Control</i>
\G0	Disables modem-to-modem flow control.
\G1	Enables modem-to-modem flow control.
\Kn	<i>Break Buffer Control, Send Break Control, Break Forces Escape</i>
\K0	Discards data, sends break before data, and enables break forces escape.
\K1	Discards data, sends break before data, and disables break forces escape.
\K2	Keeps data, sends break before data, and enables break forces escape.
\K3	Keeps data, sends break before data, and disables break forces escape.
\K4	Keeps data, sends data before break, and enables break forces escape.
\K5	Keeps data, sends data before break, and disables break forces escape.
\K6	Discards break, disables break forces escape.

AT COMMANDS *(continued)*

<i>\Nn</i>	<i>Error Control Mode</i>
\N0	Buffer Mode. Modem does not use error control; DTE rate can differ from VF rate.
\N1	Direct Mode. Modem does not use error control; DTE rate and VF rate must be the same.
\N2	MNP or Disc. Modem disconnects if it does not connect in MNP mode.
\N3	MNP or Buffer. Modem connects in Buffer mode if it does not connect in MNP mode.
\N4	V.42/MNP or Disc. Modem disconnects if it does not connect in V.42 or MNP mode.
\N5	V.42/MNP or Buffer. Modem connects in Buffer mode if it does not connect in V.42 or MNP mode.
\N6	LAPM or disconnect.
\N7	LAPM or buffer.
<i>\Qn</i>	<i>Flow Control of DTE</i>
\Q0, \Q5, \Q6	Disables flow control of DTE.
\Q1, \Q4	Enables XON/XOFF flow control.
\Q2, \Q3	Modem raises and lowers CTS to start and stop flow control.
<i>\Qn</i>	<i>Flow Control of Modem</i>
\Q0, \Q2, \Q4	Disables flow control of modem.
\Q1, \Q5	Enables XON/XOFF flow control.
\Q3, \Q6	Modem starts and stops flow control based upon state of DTE's RTS signal.
<i>\Tn</i>	<i>No Data Disconnect Timer</i>
\T0	Disables no data disconnect timer.
\Tn	Sets no data disconnect timer to a value from 1 minute to 255 minutes.
<i>\Xn</i>	<i>XON/XOFF Passthrough</i>
\X0	Disables transmission of flow control characters to remote modem.
\X1	Enables transmission of flow control characters to remote modem.
%An	Sets error control fallback character <i>n</i> to an ASCII value from 0 to 127.
%Bn	Sets data rate to <i>n</i> (300 to 19200).
%Cn	<i>MNP 5 Data Compression</i>
%C0	Disables MNP5 data compression.
%C1	Enables MNP5 data compression.
%Rn	Sets DTE rate to <i>n</i> (300 to 115200).
"Hn	<i>V.42 bis Data Compression</i>
"H0	Disables V.42bis data compression.
"H1	Enables V.42bis data compression for transmit only.
"H2	Enables V.42bis data compression for receive only.
"H3	Enables V.42bis data compression in both transmit and receive.

RESULT CODES

Numbers(1)	Numbers(2)	Words
0	0	OK
1	1	CONNECT
2	2	RING
3	3	NO CARRIER
4	4	ERROR
Result Codes 5–14, 16, 19 are enabled with the X1, X2, X3, and X4 commands.		
5	5	CONNECT 1200
6	6	NO DIALTONE
7	7	BUSY
8	8	NO ANSWER
10	10	CONNECT 2400
11	11	CONNECT 4800
12	12	CONNECT 9600
13	16	CONNECT 12000
14	13	CONNECT 14400
15	14	CONNECT 19200
16	15	CONNECT 7200
17	17	CONNECT 16800
19	19	CONNECT 300
Result Codes 20–27 are enabled with the X5 command (EC suffix) or the X6 command (V.42 or MNP suffix).		
20	10	CONNECT 2400/EC
21	11	CONNECT 4800/EC
22	12	CONNECT 9600/EC
23	16	CONNECT 12000/EC
24	13	CONNECT 14400/EC
25	17	CONNECT 16800/EC
26	15	CONNECT 7200/EC
27	5	CONNECT 1200/EC
29	14	CONNECT 19200/EC
Result Codes 15, 28–34 are enabled with the X7 command (DTE rate suffix).		
28	28	CONNECT 38400
30	30	CONNECT 57600
32	32	CONNECT 76800
34	34	CONNECT 115200

DIAL COMMAND MODIFIERS

T	Tone Dial (DTMF)
P	Pulse Dial
,	Pause
W	Wait for Dial Tone
R	Reverse Dial
@	Quiet Answer
!	Hook Flash
;	Return to Command Mode

S-REGISTERS

Register	Description	Factory Setting	Range
S0	Auto-Answer Ring Number	1	0(Disable) or 1–255 rings
S2	AT Escape Character	43(+)	0–127 ASCII
S3	Carriage Return Character	13	0–127 ASCII
S4	Line Feed Character	10	0–127 ASCII
S5	Backspace Character	8	0–127 ASCII
S6	Blind Dial Pause	2	2–255 seconds
S7	No Answer Time-out	45	1–255 seconds
S8	“,” Pause Time for the Dial Modifier	2	0–255 seconds
S10	No Carrier Disconnect	2	0–254 (10ths of a second) or 255(Disable)
S12	Escape Guard Time	50	0–255 in 20-millisecond increments
S18	Test Time-out	0(disabled)	0–255 seconds
S26	RTS/CTS Delay	0	0–255 seconds
S34	1800 Hz Training Tone	0	0(Disable); 1(Enable)
S35	Auto Redial (Leased Line)	0	0(Disable) or 1(dirs 1–2) – 9(dirs 1–10)
S36	Rate Auto Originate	0	0(Disable) or 1(4800) – 6(16,800)
S37	Auto Redial (DTR)	0	0(Dir 1) – 9(Dirs 1–10)
S38	DTR Cont Repeat	0	0=Disable, 1=Enable
S39	Receive Buffer Disconnect Delay	0	0(Disable) or 1–255 seconds
S41	Dial Line Rate	21	1=14400(V.32bis); 2=12000(V.32bis); 3=9600(V.32bis); 4=7200(V.32bis); 5=4800(V.32bis); 6=2400(V.22bis); 7=1200(V.22); 8=1200(212A); 10=0–300(V.21); 11=0–300(103J); 20=19200(V.32terbo); 21=16800(V.32terbo)
S43	V.32bis Train	0	0=Long; 1=Short
S44	Leased Line Rate	18	1=14400(V.32bis); 2=12000(V.32bis); 3=9600(V.32bis); 4=7200(V.32bis); 5=4800(V.32bis); 6=2400(V.22bis); 18=19200(V.32terbo); 19=16800(V.32terbo)
S45	Leased TX Level	0	0 dBm–15 dBm
S46	Bad Lines Auto Originate	0	0=Disable; 1=30 seconds; 2=20 seconds; 3=60 seconds; 4=90 seconds; 21=600 seconds
S47	Auto Dial Standby	0	0=Disable; 1=15 minutes; 2=1 hour; 3=4 hours; 255=Test(2min)
S48	Leased-Line Carrier On Level	0	0=–43 dBm; 1=–26 dBm
S49	Transmit Buffer Disconnect Delay	10	0=Disable or 1–255 in 1-second increments
S51	DTE RL (CT140)	0	0=Disable; 1=Enable
S52	DTE LL (CT141)	0	0=Disable; 1=Enable
S53	V.54 Address	0	0(Disable) or 1–34
S54	V.54 Device Type	0	0=Peripheral; 1=Intermediate

S-REGISTERS *(continued)*

Register	Description	Factory Setting	Range
S55	Access from Remote	0	0=Enable; 1=Disable
S61	CT111 Rate Control	0	0=Disable; 1=Fallback 1; 2=Fallback 2
S62	V.25bis Coding	0	0=ASCII; 1=EBCDIC
S63	V.25bis Idle Character	0	0=Mark; 1=Flag
S64	V.25bis New Line Character	0	0=CR+LF; 1=CR; 2=LF
S65	Line Current Disconnect	0	0=Enable (>8 msec); 1=Enable (>90 msec); 2=Disable
S66	NMS Call Messages	0	0=Call Connect & Progress; 1=Disable; 2=Call Connect Only; 3=Call Progress Only
S67	Directory Location 1 Callback	0	0=Disable; 1=Enable
S69	Make Busy Via DTR	0	0=Disable; 1=Enable
S74	Network Position	0	0=Tributary; 1=Control
S75	Network Management Address	255	0-255 (001-256)
S76	V.32bis Dial Autorate	0	0=Enable; 1=Disable; 2=Start at 4800 bps; 3=Start at 9600 bps
S77	DTR Alarm Reporting	0	0=Disable; 1=Enable
S78	V.32bis Dial Automode	0	0=Enable; 1=Disable; 2=System85
S80	No Data Disc Trigger Signal	3	0=RX or TX; 1=TX; 2=RX; 3=TX and RX
S81	Leased Line Signal Quality Retrain	0	0(Disable) or 1-5 seconds
S82	V.32bis Leased Autorate	0	0=Enable; 1=Disable
S84	AT Command Mode	0	0=Normal; 1=No Error; 2=No Strap or ERROR
S85	Fast Disconnect	0	0=Disable; 1=Enable
S88	Straps When Disconnected	0	0=No Change; 1=Reload; 2=Reload, No Change
S89	V.42 ARQ Window Size Increase	0	0(6 frames) - 9(15 frames)
S90	DTE Rate = VF Rate	0	0=Disable; 1=Enable
S91	Cellular Enhancements	0	0=Disable; 1=Enable
S93	RJ11 Cellular Adapt	0	0=Disable; 1=Enable

Important Safety Instructions

1. Read and follow all warning notices and instructions marked on the product or included in the manual.
2. This product is intended to be used with a 3-wire grounding type plug – a plug which has a grounding pin. This is a safety feature. Equipment grounding is vital to ensure safe operation. Do not defeat the purpose of the grounding type plug by modifying the plug or using an adaptor.

Prior to installation, use an outlet tester or a voltmeter to check the ac receptacle for the presence of earth ground. If the receptacle is not properly grounded, the installation must not continue until a qualified electrician has corrected the problem.

If a 3-wire grounding type power source is not available, consult a qualified electrician to determine another method of grounding the equipment.
3. Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.
4. Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.
5. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous high voltage points or other risks. Refer all servicing to qualified service personnel.
6. General purpose cables are provided with this product. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer.
7. When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.
8. A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are **interconnected**, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.
9. In addition, if the equipment is to be used with telecommunications circuits, take the following precautions:
 - Never install telephone wiring during a lightning storm.
 - Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
 - Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
 - Use caution when installing or modifying telephone lines.
 - Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
 - Do not use the telephone to report a gas leak in the vicinity of the leak.

Notices

WARNING:

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE. THE AUTHORITY TO OPERATE THIS EQUIPMENT IS CONDITIONED BY THE REQUIREMENTS THAT NO MODIFICATIONS WILL BE MADE TO THE EQUIPMENT UNLESS THE CHANGES OR MODIFICATIONS ARE EXPRESSLY APPROVED BY PARADYNE.

WARNING:

TO USERS OF DIGITAL APPARATUS IN CANADA: THE DIGITAL APPARATUS DOES NOT EXCEED THE CLASS A LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATIONS OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS. LE PRÉSENT APPAREIL NUMÉRIQUE N'ÉMET PAS DE BRUITS RADIOÉLECTRIQUES DÉPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMÉRIQUES DE LA CLASSE A PRESCRITES DANS LE RÈGLEMENT SUR LE BROUILLAGE RADIOÉLECTRIQUE ÉDICTÉ PAR LE MINISTÈRE DES COMMUNICATIONS DU CANADA.

Government Requirements and Equipment Return

Certain governments require that instructions pertaining to modem connection to the public switched telephone network be included in the installation and operation manual. Specific instructions are listed in the following sections.

Notice to Users of the United States Public Switched Telephone Network

1. This equipment complies with Part 68 of the FCC rules. On the equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. The label is located on the bottom of the Model 3830 modem.
2. For the Model 3830 standalone modem, the Universal Service Order Code (USOC) for Permissive mode is RJ11C. The Canadian equivalent to the USOC is CA11.

3. The Ringer Equivalence (REN) is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum RENs for the calling area.
4. If the Model 3830 modem causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.
5. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.
6. If you experience trouble with this equipment, please contact your sales or service representative (as appropriate) for repair or warranty information. If the product needs to be returned to the company service center for repair, contact them directly for return instructions using one of the following methods:
 - **Via the Internet:** Visit the Paradyne World Wide Web site at <http://www.paradyne.com>
 - **Via Telephone:** Call our automated call system to receive current information via fax or to speak with a company representative.
 - Within the U.S.A., call 1-800-870-2221
 - Outside the U.S.A., call 1-727-530-2340

If the trouble is causing harm to the telephone network, the telephone company may request that you remove the equipment from the network until the problem is resolved.

7. The user is not authorized to repair or modify the equipment beyond replacing the ac line fuse. Refer to the installation section of this manual for more information.
8. This equipment cannot be used on public coin service provided by the telephone company. Connection to Party Line Service is subject to state tariffs. (Contact the state public utility commission, public service commission or corporation commission for information.)
9. The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such a message clearly contains, in a margin at the top or bottom of each transmitted page, or on the first page of the transmission, the date and time it is sent, and an identification of the business, or other entity, or other individual sending the message, and the telephone number of such business, or other entity, or individual.

In order to program this information, follow the steps outlined in the manual supplied with your fax software.

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10. An FCC compliant telephone cord with modular plugs may be provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68 compliant.

Notice to Users of the Canadian Public Switched Telephone Network

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 acceptable 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 connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

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 line 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.

The Load Number for this equipment is listed on page A of this manual. The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all devices does not exceed 100.

If your equipment is in need of repair, refer to *Warranty, Sales, and Service Information* inside the cover of this document.



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