HDT 240

2400bps Modem

HDT

Communications

QUALITY COMMUNICATIONS PRODUCTS
Made in the U.S.A.

TABLE OF CONTENTS

INTRODUCTION

This manual covers configuration and operation of the HDT 240 2400bps external and rack mount modems. Specific models covered are the HDT240-S and the HDT240-R.

FRONT PANEL LIGHTS

Indicator Label	Function
MR	**Modem Ready**
AA	**Auto Answer**
OH	**Off Hook**
CD	**Carrier Detect**
TX	**Transmit Data**
RX	**Receive Data**

Back Panel Connectors

LINE - This RJ-11 connector should be used to connect the modem to a normal dial circuit.

RS-232-C - This connector provides a standard RS-232-C(V.24) interface between the modem and a wide range of DTE. The following signals are provided.

PIN #	SIGNAL DESCRIPTION	SOURCE	NOTES
1	Frame ground	DTE/DCE	
2	Transmit Data	DTE	(Tx light on front panel)
3	Receive Data	DCE	(RX light on front panel)
4	Request To Send	DTE	
5	Clear To Send	DCE	
6	Data Set Ready	DCE	(MR light on front panel)
7	Signal Ground	DTE/DCE	
8	Carrier Detect	DCE	(CD light on front panel)
20	Data Terminal Ready	DTE	
22	Ring Indicator	DCE	

DUMB MODE - Next to the RS-232-C connector is a two-pin header. When the pins of this connector are not connected (default), the modem operates in smart mode. When they are connected, the modem operates in dumb mode. For more detail, please refer to the dumb mode section of this manual.

POWER - This connector is present on all stand-alone models and accepts a 9–12VDC power source. On rack mount versions, a different power connector is used and it provides DC voltages to the modem from the rack back plane.

AT COMMAND SET

The HDT240 operates in one of two states; the command state or the on-line state. When power is applied to the 240 it will assume the command state. In command state the user may enter commands that will configure and control the modem. When the modem is connected to another modem and is prepared to transmit and receive data it is in on-line state. This section defines the commands that may be entered while in command state.

Attention Code – Command lines must begin with the characters *AT* and must be entered as all upper case or lower case characters.

Carriage Return (CR) – The command line must end with a carriage return (CR). The modem will not execute the command until it receives the CR.

Backspace Key – Prior to entering a carriage return editing may be done with the backspace key, which will erase the previous character in the command buffer but will not erase the beginning *AT*.

Missing Parameters – Missing parameters are interpreted as 0. For example the H command can have a parameter of 0 (H0) or 1 (H1). Entering ATH(CR) will be interpreted as ATH0(CR).

Command Buffer – The command buffer has a capacity of 40 characters. If an entered command line exceeds 40 characters the modem will not execute the command line and will return an ERROR result code.

Escape Code Sequence – A three digit escape code sequence forces the modem to the command state from the on-line state. The factory default escape code sequence is +++.

Result Codes – Result codes are responses by the modem to commands. Result codes may be text (words) or digits 0 – 9. Word codes follow a CR and LF sequence and will also be followed by a CR/LF sequence. A CR follows digit codes. The following table defines result codes and their associated digits.

Digit	Word	Meaning	Digit	Word	Meaning
0	OK	Command line executed without error	**6**	NO DIAL TONE	No dial tone detected
1	CONNECT	Connection at 300bps	**7**	BUSY	Busy signal detected
2	RING	Ring Signal Detected	**8**	NO ANSWER	No Silence detected when using a system not providing dial tone
3	NO CARRRIER	Carrier lost or not present	**9**		
4	ERROR	Invalid command, checksum error, or commnd line exceeded 40 characters	**10**	CONNECT 2400	Connection at 2400bps
5	CONNECT 1200	Connection at 1200bps			

NOTE - A special note on Answer/Originate speeds and Modulation:

The default mode of operation for the HDT240 is direct mode (AT\N1), which means that the modem performs no buffering. Therefore, modulation speed (DCE speed) must match DTE speed. In this mode the modem functions as follows:

Settings		Results	
DTE Speed	**AT=Bn**	**Answer and Train with:**	**Originate and Train with:**
2400	Either	V.22bis	V.22bis
2400	B0	V.22 or V.21	V.22
2400	B1	Bell 212 or Bell 103	Bell 212
1200 (note 1)	B0	V.22	V.22
1200 (note 1)	B1	Bell 212	Bell 212
300 (note 1)	B0	V.21	V.21
300 (note 1)	B1	Bell 103	Bell 103

Note 1 - When the modem hangs up from a call at either 1200 or 300 it will remain at that modulation and DTE speed setting until an AT command is issued at a rate other than that setting.

Note 2 – For applications that do not require the Direct Mode of operation the user can also set the modem to \N0 mode where buffering and flow control are provided to accommodate data rate matching so that DTE speed can remain constant as modulation speed changes. With this setting, when in answer mode, the modem DTE speed can be set to 2400 and will remain at 2400 while the modem trains at either 2400, 1200 or 300. In originate mode, the modem DTE speed can be set to 2400 and will remain at 2400 while the modem trains at either 2400 or 1200.

AT COMMANDS

A/ - Re-execute Command
The modem behaves as though the last command line had been re-sent by the DTE. "A/" will repeat all the commands in the command buffer.

AT=x - Write to Selected S-Register
This command writes the value x to the currently selected S-Register. An S-Register can be selected by using the ATSn command.

AT? - Read Selected S-Register
This command reads and displays the selected S-Register.

A - Answer
The modem will go off-hook and attempt to answer an incoming call if correct conditions are met.

Bn - CCITT or Bell
When the modem is configured to allow either option, the modem will select Bell or CCITT modulation for a line speed connection of 300 or 1200 bps according to the parameter supplied. Any other line speed will use a CCITT modulation standard.

B0 Selects CCITT operation at 300 or 1200 bps.
B1 Selects BELL operation at 300 or 1200 bps. **(Default)**

Dn - Dial

This command directs the modem to go on-line, dial according to the string entered and attempt to establish a connection. If no dial string is supplied, the modem will go on-line and attempt the handshake in originate mode. **NOTE:** If the ATD command is issued before the S1 register has cleared, the modem will respond with the NO CARRIER result code.

Dial Modifiers. The valid dial string parameters are described below. Punctuation characters may be used for clarity, with parentheses, hyphen, and spaces being ignored.

0-9 DTMF digits 0 to 9.
* The "Star" digit (tone dialing only).
# The "gate" digit (tone dialing only).
A-D DTMF digits A,B,C, and D.
J Perform MNP10 link negotiation at 1200 bps.
K Enable power level adjustment during MNP10 link negotiation.
L Re-dial last number.
P Select pulse dialing.
T Select tone dialing.
R Ignored.
S=n Dial the number stored in the directory.
! Flash: the modem will go on-hook for a time defined by the value of S29.
W Wait for dial tone: the modem will wait for dial tone before dialing the digits following "W". If dial tone is not detected within the time specified by S7, the modem will abort the rest of the sequence.
@ Wait for silence: the modem will wait for at least 5 seconds of silence in the call process frequency band before continuing with the next dial string parameter. If the modem does not detect these 5 seconds of silence before the expiration of the call abort timer (S7), the modem will terminate the call attempt with a NO ANSWER message. If busy detection is enabled, the modem may terminate the call with the BUSY result code. If answer tone arrives during execution of this parameter, the modem handshakes.
& Wait for credit card dialing tone before continuing with the dial string. If bong is not detected within the time specified by S7, the modem will abort the rest of the sequence.
' Dial pause: the modem will pause for a time specified by S8 before dialing the digits following the ",'".
; Return to command state: added to the end of a dial string, this causes the modem to return to the command state after it processes the portion of the dial string preceding the ";".
^ Toggles calling tone enable/disable: applicable to current dial attempt only.
() Ignored: may be used to format the dial string.
- Ignored: may be used to format the dial string.
<i> Invalid character: will be ignored.

En - Command Echo

The modem enables or disables the echo of characters to the DTE according to the parameter supplied.

E0 Disables command echo.
E1 Enables command echo. **(Default)**

Hn - Disconnect (Hang-Up)

This command initiates a hang up sequence.

HO The modem will release the line if the modem is currently on-line, and will terminate any test that is in progress.
H1 If on-hook, the modem will go off-hook and enter command mode.

In - Identification

The modem reports to the DTE the requested result according to the command parameter.

I0 Reports product code.
I1 Reports a pre-computed checksum.

I2 Reports "OK".
I3 Reports firmware revision (VX.XXX) model code.
I4 Reports OEM defined identifier string in Hayes compatible binary format.
I5 Reports Country Code parameter.
I6 Reports modem data pump model and internal code revision.
I7 Reports the DAA code resulting from MCU interrogation of the DAA for auto DAA recognition.

Ln - Speaker Volume
The modem sets the speaker volume control according to the parameter supplied.

L0 Low volume.
L1 Low volume. **(Default)**
L2 Medium volume.
L3 High volume.

Mn - Speaker Control

M0 Speaker is always off.
M1 Speaker is on during call establishment, but off when receiving carrier. **(Default)**
M2 Speaker is always on.
M3 Speaker is off when receiving carrier and during dialing, but on during answering.

On - Return to On-Line Data Mode
This command determines how the modem will enter the on-line data mode.

O0 Enters on-line data mode, without a retrain.
O1 Enters on-line data mode with a retrain.

P - Set Pulse Dial Default
This command forces pulse dialing until the next T dial modifier or T command is received.

Qn - Quiet Results Codes Control
The command enables or disables the sending of result codes to the DTE according to the parameter supplied.

Q0 Enables result codes to the DTE. **(Default)**
Q1 Disables result codes to the DTE.

Sn - Read/Write S-Register
The modem selects an S-Register, performs an S-Register read or write function, or reports the value of an S-Register.

n Establishes S-Register n as the last register accessed.
n=v Sets S-Register n to the value v.
n? Reports the value of S-Register n.

T - Set Tone Dial (Default)
This command forces DTMF dialing until the next P dial modifier or P command is received.

Vn - Result Code Form
This command selects the sending of short-form or long-form result codes to the DTE.

V0 Enables short-form (terse) result codes.
V1 Enables long-form (verbose) result codes. (Default)

Wn - Connect Message Control
This command controls the format of CONNECT messages.

W0 Modem reports DTE speed.
W1 Modem reports line speed error correction protocol and DTE speed.
W2 Modem reports the DCE speed. **(Default)**

Xn - Extended Result Codes
This command selects which subset of the result messages will be used by the modem to inform the DTE of the results of commands.

X0 Disables monitoring of busy tones, sends only OK, CONNECT, RING, NO CARRIER, ERROR, and NO ANSWER result codes. Blind dialing is enabled.
X1 Disables monitoring of busy tones, sends only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER, and CONNECT XXXX(XXXX=rate). Blind dialing is enabled.
X2 Disables monitoring of busy tones, sends only OK, CONNECT, RING, NO CARRIER, ERROR, NO DIAL TONE, NO ANSWER, and CONNECT XXXX.
X3 Enables monitoring of busy tones; send only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER, and CONNECT XXXX. Blind dialing is enabled.
X4 Enables monitoring of busy tones, sends all messages. **(Default).**

Zn - Soft Reset and Restore Profile
The modem performs a soft reset and restores (recalls) the configuration profile according to the parameter supplied. If no parameter is specified, zero is assumed.

Z0 Soft reset and restore stored in profile 0.
Z1 Soft reset and restore stored profile 1.

AT& COMMANDS

&Cn - RLSD (DCD) Option
This command controls the RLSD output in accordance with the parameter supplied.

&CO RLSD remains ON at all times.
&C1 RLSD follows the state of the carrier. **(Default)**

&Dn - DTR Option
This command interprets the ON to OFF transition of the DTR signal from the DTE in accordance with the parameter supplied.

&DO DTR is ignored and assumed on.
&D1 DTR drop forces modem to command state without disconnecting.
&D2 DTR drop forces hang up, auto-dial is inhibited. **(Default)**
&D3 DTR drop forces modem to soft reset.

&Fn - Restore Factory Configuration (profile)
This command loads the factory default configuration (profile).

&F0 Restore factory configuration 0.
&F1 Restore factory configuration 1.

&Gn - Select Guard Tone
This command controls the generation of guard tone.

&G0 Disables guard tone. **(Default)**
&G1 Disables guard tone.
&G2 Selects 1800 Hz guard tone.

&Kn - Flow Control
This command defines the DTE/DCE (terminal/modem) flow control mechanism.

&K0 Disables flow control. **(Default)**
&K3 Enables RTS/CTS flow control.
&K4 Enables XON/XOFF flow control.
&K5 Enables transparent XON/XOFF flow control.
&K6 Enables both RTS/CTS and XON/XOFF flow control.

&Mn - Async/Sync mode selection
This command exists for compatibility only. See \N for mode selections

&Pn - Select Pulse Dial Make/Break Ratio
This command determines the make/break ratio used during pulse dialing.

&P0 Selects 39%-61% make/break ratio at 10 pulses per second. (Default)
&P1 Selects 33%-67% make/break ratio at 10 pulses per second.
&P2 Selects 39%-61% make/break ratio at 20 pulses per second.
&P3 Selects 33%-67% make/break ratio at 20 pulses per second.

&Qn - Async/Sync mode selection
This command exists for compatibility only. See \N for mode selections

&Rn - RTS/CTS Option
This command exists for compatibility only

&Sn - DSR Override
This command selects how the modem will control DSR.

&S0 DSR will remain ON at all times. **(Default)**
&S1 DSR will become active after answer tone has been detected and inactive after the carrier has been lost. (Default)

&Tn - Test and Diagnostics
The modem will perform selected test and diagnostic functions according to the parameter supplied. A test can be run only when in asynchronous operation in non-error-correction mode (normal or direct mode). To terminate a test in progress, the escape sequence must be entered first, except for parameters 7 and 8. If S18 is non-zero, a test will terminate automatically after the time specified by S18 and display the OK message.

&T0 Terminates test in progress.
&T1 Initiates local analog loopback, V.54, Loop 3.
&T2 Returns ERROR.
&T3 Initiates local digital loopback, V.54 Loop 2.
&T4 Enables digital loopback for remote request.
&T5 Disables digital loopback for remote request. **(Default)**
&T6 Requests a remote digital loopback, V.54 Loop 2 without self test.
&T7 Requests remote digital loopback, V.54 Loop 2, with self test.
&T8 Initiates local analog loopback, V.54 Loop 3, with self test.

&V - Display Current Configuration and Stored Profiles

Reports the current (active) configuration, the stored (user) profiles, and the first four stored telephone numbers.

&V1 - Display Status of Last Call
Presents an analysis of modem performance and telephone circuit quality during the last call.

&Wn - Store Current Configuration
Saves the current configuration and S-Registers in one of the two user profiles which are kept in non-volatile memory (NVRAM).

&W0 Store as profile 0.
&W1 Store as profile 1.

&Yn - Designate a Default Profile
Selects the user profile that will be used after a reset.

&Y0 Profile 0. **(Default)**
&Y1 Profile 1.

&Zn - Store Telephone Number
The modem can store up to four telephone numbers.

&Zn=x Where n = 0 to 3 and x = dial string.

AT% COMMANDS

%C - Enable/Disable Data Compression
Enables or disables data compression negotiation. The modem can only perform data compression on an error corrected link.

%C0 Disables data compression.
%C1 Enables MNP5 data compression negotiation.
%C2 Enables V.42 bis data compression.
%C3 Enables both V.42 bis and MNP5 data compression. (Default)

%En - Enable/Disable Line Quality Monitor and Auto-Retrain or Fallback/Fall Forward
Controls whether or not the modem will automatically monitor the line quality and request a retrain (%E1) or fall back when line quality is insufficient or fall forward when line quality is sufficient (%E2).

%E0 Disable line quality monitor and auto-retrain.
%E1 Enable line quality monitor and auto-retrain.
%E2 Enable line quality monitor and fallback/fall forward.

%L - Line Signal Level
Returns a value which indicates the received signal level.

%Q - Line Signal Quality
Reports line signal quality.

AT\ COMMANDS

\Nn - Operating Mode
This command controls the preferred error correcting mode to be negotiated in a subsequent data connection.

\N0 Normal speed buffered mode (disables error correction).
\N1 Direct mode. **(Default)**
\N2 MNP only.
\N3 MNP with fallback to normal mode (auto reliable mode).
\N4 V.42 only.
\N5 V.42 with fallback to MNP only.

\Vn - Enhanced Connect Message
Presents a comprehensive, single line connect message, showing DTE speed, DCE speed, protocol and compression.

\V0 Disa le enhanced connect message **(Default)**
\V1 Enable enhanced connect message

AT+ COMMANDS

+IPR – Fixed DTE Rate - +IPR <DTE Rate>

Specifies the data rate at which the modem will accept commands during online operation. Specifying a value of 0 disables the function and allows operation only at rates automatically detectable by the modem (autobaud).
Valid rates for the <DTE Rate> argument are: 0,300,1200,2400

S-REGISTERS

The table in this section summarizes the S-Registers and their default values. Registers denoted with (*) may be stored in one of the two user profiles by entering the &Wn command. One of these profiles may be loaded at any time by using the Zn command. Registers or register fields quoted as "reserved" are reserved for current or future use. All bit-mapped registers are read-only. The appropriate AT command, which controls the relevant bits in the S-Register, should be used to change the value.

Factory Defaults
The factory default values are stored in ROM and are loaded into the active configuration at power up or by the ATZn command. In addition, the designated default profile is subsequently loaded, and may change some of the factory default values. The designated default profile can be changed by entering the &Yn command where n is one of the two possible use profiles. The factory default values may be loaded at any time by entering the &Fn command.

S-REGISTER SUMMARY

Register	Function	Range	Units	Saved	Default
S0	Rings to Auto-Answer	0-255	Rings	*	0
S1	Ring Counter	0-255	Rings		0
S2	Escape Character	0-255	ASCII	*	43
S3	Carriage Return Character	0-127	ASCII		13
S4	Line Feed Character	0-127	ASCII		10
S5	Backspace Character	0-255	ASCII		8
S6	Wait Time for Dial Tone	2-255	sec	*	2
S7	Wait Time for Carrier	1-255	sec	*	50
S8	Pause Time for Dial Delay	0-255	sec	*	2
S9	Carrier Detect Response time	1-255	0.1s	*	6
S10	Carrier Loss Disconnect time	1-255	0.1s	*	14
S11	DTMF Tone Duration	50-255	0.001s	*	95
S12	Escape Prompt Delay	0-255	0.02s	*	50
S24	Sleep Inactivity Timer	0-255	S	*	0
S25	Delay to DTR Off	0-255	s or 0.01s		5
S26	RTS-to-CTS Delay	0-255	0.01s		1
S30	Disconnect Timer	0-255	10 s		0
S38	Delay Before Hang up	0-255	Sec		20
S86	Call Failure Reason	0-255			

* Register value may be stored in either user profile with the &W command.

S – Register Definition Details

Name	S Reg	Values	Description
Number of Rings to Auto Answer	S0		Sets the number of the rings required before the modem automatically answers a call. Setting this register to zero disables auto-answer mode. Range:0-255 rings Default:0
Ring Counter	S1		S1 is incremented each time the modem detects a ring signal on the telephone line. S1 is cleared if no rings occur over an eight second interval. Range: 0-255 rings Default:0
Escape Character	S2		S2 holds the decimal value of the ASCII character used as the escape character. The default value corresponds to an ASCII "+". A value over 127 disables the escape process, i.e., no escape character will be recognized. Range: 0-255, decimal Default: 43(+)
Carriage Return Character	S3		Sets the command line and result code terminator character. Range: 0-127, decimal Default: 13 (Carriage Return)
Line Feed	S4		Sets the character recognized as a line feed.

Character			Range: 0-127, decimal Default: 10(line feed)
Backspace Character	S5		Sets the character recognized as a backspace. Range: 0-255, decimal Default: 8 (Backspace)
Wait Time for Dial Tone Before Blind Dialing	S6		Sets the length of time in seconds that the modem will wait before starting to dial after going off-hook when blind dialing. The modem always pauses for a minimum of 2 seconds, even if the value of S6 is less than two seconds. Range: 2-255 seconds Default: 2
Wait Time for Carrier After Dial, For Silence, or For Dial Tone After "W" Dial Modifier	S7		1. Sets the length of time, in seconds, that the modem will wait for carrier before hanging up. The timer is started when the modem finishes dialing (originate), or 2 seconds after going off-hook (answer). In originate mode, the timer is reset upon detection of answer tone. 2. Sets the length of time, in seconds, that modem will wait for silence when encountering the @ dial modifier before continuing with the next dial string parameter. 3. Sets the length of time, in seconds, that the modem will wait for dial tone when encountering a "W" dial modifier before continuing with the next dial string parameter. Range: 1-255 seconds Default: 50
Pause Time for Dial Delay	S8		Sets the time, in seconds, that the modem must pause when the "," dial modifier is encountered in the dial string. Range: 0-255 seconds Default: 2
Carrier Detect Response Time	S9		Sets the time, in tenths of a second, that the carrier must be present before the modem considers it valid and turns on RLSD. Range: 1-255 tenths of a second Default:6 (0.6 second)
Lost Carrier to Hang Up Delay	S10		Sets the length of time, in tenths of a second that the modem waits before hanging up after a loss of carrier. When register S10 is set to 255, the modem functions as if a carrier is always present. The actual interval the modem waits before disconnecting is the value is register S10 minus the value in register S9. Therefore, the S10 value must be greater than the S9 value or else the modem disconnects before it recognizes the carrier. Range: 1-255 tenths of a second Default:14 (1.4 seconds)
DTMF Tone Duration	S11		Sets the duration of tones in DTMF dialing. This value has no effect on pulse dialing. Range: 50-255 milliseconds Default: 95 (95 milliseconds)
Escape Prompt Delay	S12		Defines the maximum period in fiftieths of a second, allowed between receipt of the last character of the three escape character sequence from the DTE and the sending of the OK result code to the DTE. If any characters are detected during this time, the OK will not be sent. Range: 0-255 1/50 of a second Default: 50 (1 second)
Sleep Inactivity Timer	S24		Sets the length of time, in seconds, that the modem will operate in normal mode with no detected telephone line or DTE line activity before entering low-power sleep mode. The timer is reset upon any DTE line or telephone line activity. If the S24 value is zero, neither DTE line nor telephone inactivity will cause the modem to enter the sleep mode. Range: 0-255 seconds Default: 0

Delay to DTR	S25		Set the length of time that the modem will ignore DTR for taking the action specified by &Dn. Its units are seconds for synchronous modes and one hundredths of a second for other modes. Range: 0-255 Default: 5
RTS to CTS Delay	S26		Sets the time delay, in hundredths of a second, before the modem turns CTS ON after detecting an OFF-to-ON transition on RTS when &R0 is commanded. Range: 0-255 hundredths of a second Default: 1
Disconnect Inactivity Timer	S30		Sets the length of time in tens of seconds, that the modem will stay on line before disconnecting when no data is sent or received. Range: 0-255 tens of seconds (0-2550 seconds) Default: 0 (disabled)
Delay Before Forced Hang Up	S38		This register specifies the delay between the modem's receipt of the H command to disconnect (or ON-to-=OFF transition of DTR if the modem is programmed to follow the signal), and the disconnect operation. Applicable to error-correction connection only. This register can be used to ensure that data in the modem buffer is sent before the modem disconnects. 1. If S38 is set to a value between 0 and 254, the modem will wait that number of seconds for the remote modem to acknowledge all data in the modem buffer before disconnecting. If time expires before all data is sent, the NO CARRIER result code will be issued to indicate that data has been lost. If all data is transmitted prior to time-out, the response to the H0 command will be OK. 2. If S38 is set to 255, the modem does not time-out and continues to attempt to deliver data in the buffer until the connection is lost or the data is delivered. Range: 0-255 seconds Default: 20
Call Failure Reason Code	S86		When the modem issues a NO CARRIER result code, a value is written to this S-Register to help determine the reason for the failed connection. S86 records the first event that contributes to a NO CARRIER message. The cause codes are: Range: 0,4,5,9,12,13, or 14 Defaults: S86=0 Normal disconnect, no error occurred S86=4 Loss of carrier S86=5 V.42 negotiation failed to detect an error correction modem at the other end S86=9 The modems could not find a common protocol S86=12 Normal disconnect initiated by the remote modem S86=13 Remote modem does not respond after 10 transmissions of the same message S86=14 Protocol violation

DUMB MODE OF OPERATION

On the back of the modem, there is a two pin jumper located next to the V.24(RS-232-C) DB-25 connector. When the two pins on that jumper are connected together, the modem will then operate in dumb mode.

In dumb mode, the modem will operate as though it has no command mode. When the modem is powered on or reset, it will go directly into the mode of operation that it has been configured for. The dumb mode of operation is necessary for a range of special dial applications where the DTE expects the modem to have no command mode.

To place the modem in dumb mode, it is necessary to first configure the modem to the specific requirements of a particular application. It is recommended that this configuration string include S2=127 to eliminate the possibility of an escape sequence placing the modem in online command mode. Next, the configuration must be saved. Once the configuration has been saved, install the dumb mode jumper and then cycle power on the modem. It will then be in dumb mode. If it becomes necessary to reconfigure the modem, remove the dumb mode jumper and cycle power on the modem. When the modem powers up, press any key and it will then be in command mode.

CERTIFICATIONS

FCC Part 68

This equipment complies with U.S. Code of Federal Regulations, Title 47, FCC Rules and Regulations Part 68. Located on the equipment is the FCC Registration Number and Ringer Equivalence Number (REN). You must provide this information to the telephone company if requested.

The Registration Number and REN will be on a label attached to the unit. The FCC requires these numbers be prominently displayed on an outside surface of the equipment.

The REN is used to determine the number of devices you may legally connect to your telephone line. In most areas, the sum of the REN of all devices connected to one line must not exceed five (5.0). You should contact your telephone company to determine the maximum REN for your calling area. The telephone company may change technical operations or procedures affecting your equipment. You will be notified of changes in advance to give you ample time to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact HDT Communications . at (949) 454-8125 for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been resolved. If your equipment continues to disrupt the network, the telephone company may temporarily disconnect service. If this occurs you will be informed of your right to file a complaint with the FCC.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

FCC Part 15

This equipment has been tested and complies with the limits for a Class A computing device according to U.S. Code of Federal Regulations, Title 47, FCC Rules and Regulations Part 15. Operation is subject to the following two conditions:
(1) This device may cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.