



STATUS LED

STATUS	Color/Action	Description
GREEN	Solid	Everything functioning normally
BLINKING	Green	ES, SES, or BPV detected
YELLOW	Solid	Loopbacks active
BLINKING	Yellow	In-band loopbacks armed
RED	Solid	Alarm on the HDSL2 loop, DSX or DS1 interface
BLINKING	Red	Signal Quality of 0 or No Sync on the HDSL2 loop

FOUR-CHARACTER DISPLAY (FCD) OPERATION



Left = MODE
Center = OFF
Right = SELECT

FCD Modes

Mode	Message	Function
Status	STAT	Displays loop margin, alarms, and general status conditions
Display Off	Blank	Blank after five minutes of no activity
View	VIEW	View current options settings
Loopback	LPBK	Select and execute HDSL2 circuit loopbacks

Status/Alarm Display ("STAT")

Message	Description
MARG xx	HDSL2 loop margin, 0-20
DSL ERR	CRC error detected on HDSL2 Loop
LOC ERR	Frame bit error (SF Mode), Bipolar Violation (BPV), or CRC error (ESF Mode) detected locally at DSX-1 of the H2TU-C
REM ERR	Frame bit error (SF Mode), Bipolar Violation (BPV), or CRC error (ESF Mode) detected remotely at DS1 of the H2TU-R
DSL LOS	No synchronization of H2TU-C and H2TU-R on loop
LOC LOS	DSX signal is absent from the network interface or is of a format which does not match the provisioning of the HDSL2 circuit
REM LOS	DS1 signal is absent from the network interface or is of a format which does not match the provisioning of the HDSL2 circuit
ARM	NIU Loopback is armed

COMPLIANCE CODES

This product is intended for installation in restricted access locations only and in equipment with a Type "B" or "E" installation code.

Input current at maximum load is 0.7 A at -48 Vdc. Maximum output at over current condition is 165 mA at -190 Vdc.

CODE	IN	OUT
Installation Code (IC)	A	-
Telecommunication Code (TC)	-	X
Power Code (PC)	F	C

WARRANTY

Warranty for Carrier Networks products manufactured by ADTRAN and supplied under Buyer's order for use in the U.S. is ten (10) years. For a complete copy of ADTRAN's U.S. Carrier Networks Equipment Warranty: (877) 457-5007, Document #414.

Option Settings Display ("VIEW")

Message	Description	Settings	Default
LBO	Line Build Out	EXT, 0, 133, 266, 399, 533	*
CODE	Line Code	AMI, B8ZS	B8ZS
FRMG	DSX-1 Framing	AUTO, UNF	UNF
NLBK	NIU Loopback	EN, DIS	EN
LBTO	Loopback Timeout	NONE, 1 Hr, 2 Hr, 8 Hr, 24 Hr	1 Hr
CLOS	Customer Loss Response	AIS, LPBK	AIS
PRM	Performance Reporting Messages	NPRM, SPRM, NONE, AUTO	AUTO
TXLV	DS1 Transmit Level	0 dB, -7.5 dB, -15 dB	0 dB
SPWR	Span Power	EN, DIS	EN
ALMP	Alarm Pattern to Customer	AIS, LOS	AIS

* 220 = EXT, 3192/DDM+ = 0

Loopback Options Display ("LPBK")

Select	Loopback State	Loopback Description
HTUC	NET	Network loopback at H2TU-C
	CST	Customer loopback at H2TU-C
	NONE	No active loopback
HTUR	BLB	Bidirectional loopback at H2TU-R
	NET	Network loopback at H2TU-R
	CST	Customer loopback at H2TU-R
	NONE	No active loopback

DSX-1 BANTAM JACKS

EQ

- Provides an intrusive access point to the data stream.
 - TX - Access the data stream being received from the network.
 - RX - Access the data stream being transmitted to the network.

MON

- Provides a non-intrusive access point to the data stream.
 - TX - Monitors the data stream being received from the network
 - RX - Monitors the data stream being transmitted to the network.

NOTE: The DDM+ H2TU-C does not have the DSX-1 Bantam Jacks option.

RS-232 DB-9 CONNECTOR

- Used to access performance monitoring data, perform loopbacks and provision units via VT100 emulation applications such as Hyper Terminal - Private Edition, ProComm Plus, and Telnet.
- There are two types of terminal emulation modes, Manual and Real-Time. Use "CTRL-T" to toggle between the two modes.

Manual Emulation Mode: Press the space bar 3 times to manually update the screen. Print screen and log file commands are available in this mode.

Real-Time Emulation Mode: The default mode. Print screen and log file commands are not available in this mode. Cursor placement and screen highlighting are enabled.

- Provision terminal port as follows:
 - Data Rate — 1.2 to 19.2 kbps
 - Asynchronous Data Format — eight data bits, no parity (none), one stop bit
- When using a PC with terminal software, be sure to disable any power saving programs.

PROVISIONING NOTES

- This unit can be provisioned via the RS-232 port or remotely via ITS codes. This unit cannot be provisioned from the faceplate four-character display. Select "2" from the ADTRAN HDSL2 Main Menu Screen to view the Provisioning Screen.



CAUTION!
SUBJECT TO ELECTROSTATIC DAMAGE
OR DECREASE IN RELIABILITY.
HANDLING PRECAUTIONS REQUIRED.

HDSL2 DEPLOYMENT GUIDELINES

- Cable pairs must be non-loaded
- Total bridged tap length < 2.5 kft
- No single bridged tap >2 kft
- 196 kHz insertion loss ≤ 35 dB
- Pulse attenuation (ATTEN on HDSL2 Span Status Screen) ≤ 30 dB
- Maximum loop resistance is 900 Ω
- Impulse noise ≤ 50 dBm as measured using a 50 kb filter
- Wideband noise ≤ 31 dBm as measured using a 50 kb filter

TURN UP GUIDELINES

Circuit Parameters Under Normal Operation

- Margin ≥ 6 dB
- Attenuation ≤ 30 dB
- Insertion Loss ≤ 35 dB
- No ES, SES, or UAS

If these parameters are met, then the circuit will provide quality service. If not, a cable problem or excessive loss situation is probable. In this case, a more detailed cable analysis is required to insure that all HDSL2 Loop Specifications are met.

These conditions may also be the result of intermittent cable faults or intermittent noise impairments. If intermittent problems are suspected, utilize the Performance History Screen (Main Menu selection #5) to assist in troubleshooting. An example of a Performance History Screen is illustrated in the bottom right-hand corner.

Front Panel Indicators Under Normal Operation

- STATUS LED will be Green (solid)

NOTE: The circuit must have DSX-1 signal (from Network) and DS1 signal (from Customer) in order for the LED to be Green. If either DSX-1 or DS1 signal is not present, the LED will be Red.

- The four-character display will flash the current loop margin for the HDSL2 loop. No alarm or error messages will be displayed. After five minutes of no activity, the display will turn completely Off. It will remain Off until MODE or SELECT is activated or a message other than loop margin is to be displayed.

TROUBLESHOOTING GUIDELINES

Front Panel Indicators

- All indicators are Off.

1. Verify that -48 Vdc is properly connected.
2. Inspect fuse and verify that it is not blown.
3. Insert the H2TU-C into a slot known to be good and verify that the STATUS indicator is lit. If card fails replace H2TU-C.

- Status LED is Blinking Red

Poor signal quality or loss of sync. Use basic troubleshooting procedures to identify cable pair problems.

- Status LED is Solid Red

If customer equipment is not installed, initiate an H2TU-R to Network Loopback and perform BERT test. If this test fails, or the craft interface indicates a loss of sync, then there is a problem with the cable pair that should be resolved through normal troubleshooting procedures.

- Status LED is Blinking Green

Errors are being taken on the DSX, DS1, or HDSL2 loop. The craft interface screens will identify the source. BERT test to the appropriate loopbacks should isolate the problem.

Four Character Display

- The error messages for this display are defined on page 1 of this guide.

Craft Interface Screens

- Detailed Status Screen Provides instant view of system status (Main Menu selection "3", Span Status selection "2")
- Alarm History Screen Provides a record of system alarms (Main Menu selection "8")
- Event History Screen Provides last 100 events on the system (Main Menu selection "9")
- Performance History Screens Provide performance data for all points in the system (Main Menu selection "5")

```

Circuit ID:                                01/01/00 00:40:52
Press ESC to return to previous menu

Detailed HDSL2 and T1 Status

HDSL2 RECEIVER DATA
H2TU-C   H2TU-R
-----  -----
MARGIN(CUR/MIN/MAX): 18/00/20  20/00/21
ATTEN(CUR/MAX):      21/21     20/20
INS LOSS(CUR/MAX):   25/25     24/24
ES 15MIN:            000       000
SES 15MIN:           000       000
UAS 15MIN:           000       000

DSX-1    T1 DATA    DS1
-----  -----
FRAMING: UNFR        UNFR
LINE CODE: B8ZS      B8ZS
ES-P/ES-L: 000/000   000/000
SES-P/SES-L: 000/000   000/000
UAS-P/UAS-L: 000/000   000/000
ALARMS:    NONE      NONE

1. Zero Registers
2. Restart Min/Max

Selection:
    
```

```

Circuit ID:                                01/01/00 00:42:53
Press ESC to return to previous menu

Menu                24 Hour H2TUC DSX-1 Performance Data
-----  -----
1. Definitions      ES-L   SES-L   UAS-L   PDVS-L   B8ZS-L   CV-L
2. Reset Data       00000  00000  00000  00000   02571   0000000
3. 15 Min Data     12/31  -----  -----  -----  -----  -----
4. 60 Min Data     12/30  -----  -----  -----  -----  -----
5. 24 Hr Data      12/29  -----  -----  -----  -----  -----
6. Line Data       12/28  -----  -----  -----  -----  -----
7. Path Data       12/27  -----  -----  -----  -----  -----
8. H2TUC DSX-1     12/26  -----  -----  -----  -----  -----
9. H2TUC LOOP      12/25  -----  -----  -----  -----  -----
10. H2TUR LOOP     12/24  -----  -----  -----  -----  -----
11. H2TUR DS1      12/23  -----  -----  -----  -----  -----
                   12/22  -----  -----  -----  -----  -----

-8->| C |          | R |----->
    | |          | |
<---|_|          |_|<--11-
    
```

Selection:

■ For complete Installation and Maintenance: (877) 457-5007, Document #529, #555, and #556. Please have your fax number available. ■