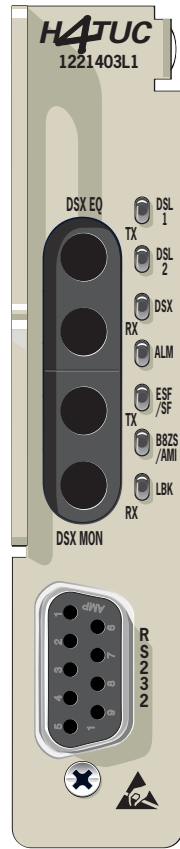


## HDSL4 DDM+ H4TU-C

CLEI: T1L310BA\_ \_



### LED STATUS

<b>DSL1/DSL2</b>	● Green	Loop 1 / Loop 2 synchronization achieved and signal is present. No errors currently detected, and SNR margin $\geq 6$ dB.
	● Red	Loop 1 / Loop 2 synchronization not achieved, in sync with errors, or SNR margin $\leq 6$ dB.
<b>DSX</b>	● Green	DSX-1 signal present and no errors currently detected.
	● Red	In framed mode, denotes loss of framing or loss of sync at the DSX-1 input. In unframed mode, denotes loss of signal DSX-1 input.
<b>ALM</b>	○ Off	No T1 alarms are active.
	● Red	Loss of DSX-1 signal from the network.
	● Yellow	Loss of DS1 signal from the CPE.
<b>ESF/SF</b>	○ Off	Unframed.
	● Yellow	ESF framing.
	● Green	SF framing.
<b>B8ZS/AMI</b>	● Yellow	B8ZS line coding.
	● Green	AMI line coding.
<b>LBK</b>	○ Off	No local loopbacks active.
	● Yellow	Local loopback active.

### DSX EQ SPLITTING JACKS

- TX DSX-1 transmit toward the local loop (intrusive)
- RX DSX-1 receive from the local loop (intrusive)

### DSX MONITOR JACKS

- TX DSX-1 transmit toward the local loop (nonintrusive)
- RX DSX-1 receive from the local loop (nonintrusive)

### COMPLIANCE

**Warning:** Up to -200 VDC may be present on telecommunications wiring. The DSX-1 interface is intended for connection to intra-building wiring only. Ensure chassis ground is properly connected.

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

Code	Input	Output
Power Code (PC)	F	C
Telecommunication Code (TC)	-	X
Installation Code (IC)	A	-

This product provides span powering voltage (negative only with respect to ground, -190 VDC nominal, GFI protection  $< 5$  mA) and meets all requirements of Bellcore GR-1089-CORE (Class A2) and ANSI T1.418 Issues 1 and 2. This product is NRTL listed to the applicable UL standards.

### DEFAULT PROVISIONING VALUES

Provisioning Options	Option Settings	Default Settings
1. DSX-1 Line Build Out	0-133 ft, 133-266 ft, 266-399 ft, 399-533 ft, 533-655 ft	0-133 feet
2. DSX-1/DS1 Line Code	AMI, B8ZS	B8ZS
3. DSX-1/DS1 Framing	SF, ESF, Unframed	ESF
4. Smartjack Loopback	Disabled, Enabled	Enabled
5. Loopback Timeout	None, 20 Minutes, 60 Minutes, 120 Minutes	120 Minutes
6. DS1 TX Level	0 dB, -7.5 dB, -15 dB	0 dB
7. Span Power	Disabled, Enabled	Enabled
8. Customer Loss Indicator	AIS, AIS/CI, Loopback	AIS/CI
9. PRM Setting	None, SPRM, NPRM	None
10. Loop Atten Alarm Thres	0. Disabled, 1-99. Alarm Thres in dB	38 dB
11. SNR Margin Alarm Thres	0. Disabled, 1-15. Alarm Thres in dB	04 dB



ADTRAN HDSL4 equipment is designed with troubleshooting-at-a-glance features. The following information provides suggestions for troubleshooting as a result of LED indications which are indicative of loop trouble.

**NOTE:** Pressing "ESC" while on any screen will go back to the previous screen.

## INDICATIONS AND POSSIBLE CAUSES

### DSL LED Yellow

Connect a terminal or PC to the RS-232 (DB-9) craft interface on faceplate. The terminal must be VT100 or compatible and set for 1.2 to 19.2 kbps, 8 data bits, no parity, 1 stop bit, No Flow control. Select "3" from the ADTRAN HDSL4 Main Menu Screen and "1" from the Span Status Screen. Verify the following conditions on the Detailed HDSL4 and T1 Status Screen:

- Margin  $\geq$  6 dB
- Pulse Attenuation  $\leq$  35 dB (1st segment)  
Pulse Attenuation  $\leq$  31 dB (2nd/3rd segment)
- No HDSL, ES, SES, or UAS (Performance History Screen, Main Menu Selection 5)

Circuit ID:		01/07/00 18:18:32					
Press ESC to return to previous menu							
Detailed Status Screen							
Interface	LOOP 1			LOOP 2			
	MARGIN (CUR/MIN/MAX)	ATTEN (CUR/MAX)	ESTIMATED INS. LOSS	MARGIN (CUR/MIN/MAX)	ATTEN (CUR/MAX)	ESTIMATED INS. LOSS	
H4TUC	17/00/17	00/00	00	17/00/17	00/00	00	
H4R1 NETW	17/00/17	00/00	00	17/00/17	00/00	00	
H4R1 CUST	17/00/17	00/00	00	17/00/17	00/00	00	
H4R2 NETW	17/00/17	00/00	00	17/00/17	00/00	00	
H4R2 CUST	17/00/17	00/00	00	17/00/17	00/00	00	
H4TUR	17/00/17	00/00	00	17/00/17	00/00	00	

1. Reset Min/Max  
2. View Performance History

If the above conditions exist, the circuit should provide quality service; however, if any of the above conditions do not exist, a cable problem or excessive loss situation is probable, and more detailed cable testing should be done to verify all HDSL4 Loop Specifications are met. These conditions may also reflect intermittent cable faults or excessive noise impairments. If intermittent faults or noise impairments are suspected, review the Performance History Screen.

**NOTE:** The insertion loss reading shown on the Detailed Status Screen is an approximation that is valid for some loops. Caution should be used when using this value.

## HDSL4 DEPLOYMENT GUIDELINES

The first segment of the circuit is defined as the section of the HDSL4 loop between the H4TU-C and the first H4R, the second segment is between the first H4R and the second H4R (dual repeater designs) or between the H4R and the H4TU-R (single repeater designs), and the third segment is between the second H4R and the H4TU-R.

**NOTE:** If dual repeaters are used in the circuit, please refer to the "HDSL4 Deployment Guidelines" section of the Installation and Maintenance Practice for DC resistance guidelines for span powering.

- Margin  $\geq$  6 dB
- Pulse Attenuation  $\leq$  35 dB (1st segment)  
Pulse Attenuation  $\leq$  31 dB (2nd/3rd segment)
- All loops are nonloaded
- Any single bridge tap is limited to 2 kft
- Total bridge tap length is limited to 2.5 kft
- Loop length up to 16 kft (24 AWG) on circuit containing no H4Rs
- Loop length up to 16 kft first segment and 15 kft second segment (24 AWG) on circuit containing one H4R
- Loop length up to 13.5 kft first segment, 14 kft second segment, 15 kft third segment (24 AWG) on circuit containing two H4Rs
- First segment (or a circuit containing no H4Rs) Insertion Loss  $\leq$  46 dB
- Second and third segment Insertion Loss  $\leq$  42 dB
- Maximum loop resistance is 1150 Ohms for circuits without an H4R.
- Impulse Noise =50 dBm as measured using a 50 kb filter
- Wideband Noise =31 dBm as measured using a 50 kb filter
- Foreign Voltage DC (t-r, t-g, r-g) < 3 VDC
- Insulation Resistance (t-r, r-g, t-g) > 3.5 M
- Longitudinal Noise (Power Influence) < 80 dBmC

## LOOPBACK AND CONTROL CODES

Pattern	Description	Requires Arming?
1in3	Loop down all units and disarm	No
2in5	Arming Pattern, H4TU-R will loop up if Smartjack LB is enabled	No
3in5	Disarm and loop down all units. Restores LB TMO after D5D6	No
2in6	H4R LB to Network	
3in6	H4R LB to Network	
4in6	H4R LB to Customer	
5in6	H4R LB to Customer	
3in7	H4TU-R LB to Network	No
4in7	H4TU-C LB to Network	No
5in7	H4TU-R LB to Customer	No
6in7	H4TU-C LB to Customer	No
3F1E	H4TU-C LB to Customer	No
3F02	H4TU-R LB to Customer	No
3F04	H4R LB to Customer	
3F06	H4R LB to Customer	
6767	Disable span powering while present	Yes
9393	Loop down H4TU-C, Repeaters - all loopbacks. Loop down H4TU-R - Cust LB always. Will only loop down H4TU-R Net LB if NIU is disabled. Does not Disarm units if they are armed.	No
C741	H4R #1 loop up pattern. 10 bit error injection.	Yes
C742	H4TU-R loop up pattern. 20 bit error injection.	Yes
C754	H4R #2 loop up pattern. 200 bit error injection.	Yes
D3D3	H4TU-C loop up pattern. 231 bit error injection.	Yes
D5D5	Query Loopback Pattern (error injection)	
D5D6	H4TU-C: 231 Errors, H4R #1: 10 Errors, H4R #2: 200 Errors, H4TU-R: 20 Errors	No
D5D6	Loopback Timeout Override: Disables LB time out. Restores original LB time out when unit is disarmed.	Yes
FF48	FDL Arming Pattern (ESF only). Arms all units, H4TU-R will LB to Network if NIU Enabled (if pattern sources at network).	No
FF24	FDL Disarm Pattern (ESF only). Loop down and disarm all units	No
FF1E	H4TU-C LB to Network. Will not loop up H4TU-C if H4TU-C already in LB to Customer.	No
FF02	H4TU-R LB to Network. Will not loop up H4TU-R if any unit already in LB to Customer.	No
FF04	H4R LB to Network	
FF06	H4R LB to Network	

## 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. and Canada Carrier Networks Equipment Warranty (P/N 60000087-10): call (877) 457-5007, faxback Document 414.