T200 H4TU-R

CLEI: T1L5JZTC_ _

H4TUR
1222426L1

- DSL 1
- DSL 2
- DS1
- ALM
- ESF/SF (YEL) (GRN)
- B8ZS/AMI (YEL) (GRN)
- LLB/RLB (YEL) (GRN)

LOC

REM — LBK

TX MON RX

RS232

C A U T I O N !
SUBJECT TO ELECTROSTATIC DAMAGE OR DECREASE IN RELIABILITY. HANDLING PRECAUTIONS REQUIRED.

LED STATUS

DSL 1	●	Green	DSL Loop 1 sync, no errors currently detected, and signal margin ≥ 3 dB
	●	Red	No DSL Loop 1 sync, errors being detected, or signal margin < 3 dB
DSL 2	●	Green	DSL Loop 2 sync, no errors currently detected, and signal margin ≥ 3 dB
	●	Red	No DSL Loop 2 sync, errors being detected, or signal margin < 3 dB
DS1	●	Green	DSX-1 signal is present and no errors currently being detected
	●	Red	No DSX-1 signal or signal is present with errors
ALM	○	Off	No active alarm present
	●	Yellow	Loss of DS1 signal to the remote
	●	Red	Loss of DSX-1 signal to the unit
ESF / SF	○	Off	Unit has detected UNFRAMED data
	●	Green	Unit has detected SF data
	●	Yellow	Unit has detected ESF data
B8ZS / AMI	●	Green	Unit has detected AMI data
	●	Yellow	Unit has detected B8ZS coded data
LLB / RLB	○	Off	Unit is NOT in loopback
	●	Yellow	Unit is in loopback (network and/or customer)

OPTIONS

Front Panel Buttons
LOC Initiates a bidirectional loopback of the H4TU-R toward the network and customer
REM Initiates a loopback at the H4TU-C toward the customer

POWER

This specific unit is intended for **span power only**. If a locally powered unit is needed, refer to P/N 1221424L1.

DS1 MONITOR JACKS

TX DS1 signal from CPE toward Network (nonintrusive)
RX DS1 signal from Network toward CPE (nonintrusive)

COMPLIANCE

Warning: Up to –200 VDC may be present on telecommunications wiring. Ensure chassis ground is properly connected.
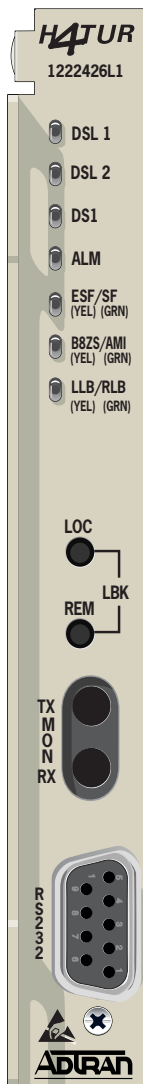
This product is intended for installation in restricted access locations only and in equipment with a Type "B" or "E" enclosure.

This product meets all requirements of Bellcore GR-1089-CORE (Class A2), ANSI T1.418-2002 and is NRTL listed to the applicable UL standards.

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

CARD EDGE PIN ASSIGNMENTS

Pin	Assignment
1	Chassis Ground
2	—
3	—
4	DS1 TX Tip
5	
6	HDSL4 Tip (Loop 1)
7	
8	—
9	—
10	Chassis Ground
11	GND Protection Switching
12	HDSL4 Ring (Loop 1)
13	
14	DS1 TX Ring
15	
16	—
17	—
18	—
19	VCC
20	
21	—
22	—
23	—
24	—
25	—
26	Chassis Ground
27	
28	—
29	—
30	—
31	—
32	—
33	—
34	—
35	—
36	—
37	—
38	—
39	Protection Switching
40	HDSL4 Tip (Loop 2)
41	
42	—
43	—
44	—
45	—
46	HDSL4 Ring (Loop2)
47	
48	DS1 RX Ring
49	
50	—
51	—
52	—
53	—
54	DS1 RX Tip
55	

HDSL4 TROUBLESHOOTING GUIDE

PRICING AND AVAILABILITY 800.827.0807
TECHNICAL SUPPORT 800.726.8663
RETURN FOR REPAIR 256.963.8722
www.adtran.com
61222426L1-22C

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 Red
Connect a terminal or PC to the RS-232 (DB-9) craft interface on the front panel. 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 HDSL4 and T1 Detailed Status Screen:

- Margin ≥ 3 dB
- Attenuation ≤ 35 dB (1st segment)
  Attenuation ≤ 31 dB (2nd segment)
- No ES, SES, or UAS (Performance History Screen, Main Menu Selection 5)

If the above conditions do 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.

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Circuit ID:                                      01/07/00 18:18:32
                  Press ESC to return to previous menu

                          Detailed Status Screen

                       LOOP 1                       LOOP 2
              MARGIN     ATTEN  ESTIMATED   MARGIN     ATTEN  ESTIMATED
Interface  (CUR/MIN/MAX)(CUR/MAX) INS. LOSS (CUR/MIN/MAX)(CUR/MAX) 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
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NOTE: The insertion loss reading shown on the Detailed Status Screen is an approximation that is valid for some loops. Exercise caution when using this value.

HDSL4 DEPLOYMENT GUIDELINES

The guidelines provided below apply to the segments of an HDSL4 circuit, as follows:

1st segment = between the H4TU-C and H4R

2nd segment = between two H4Rs or single H4R and H4TU-R

3rd segment = between the second H4R and the H4TU-R

These deployment guidelines provide the basics for HDSL4 circuit provisioning. 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 ensure that all HDSL4 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 to assist in troubleshooting.

1. All loops are nonloaded only
2. Any single bridged tap is limited to 2 kft.
3. Total bridged tap length is limited to 2.5 kft.
4. Bridge tap within 1000 feet of units may affect performance of the circuit
5. Margin ≥ 6 dB (Detailed Status Screen)
6. No ES, SES, or UAS (Performance History Screen)
7. Foreign Voltage DC (t-r, t-g, r-g) < 3 VDC
8. Insulation Resistance (t-r, r-g, t-g) > 3.5 MΩ
9. Impulse Noise ≤ –40 dBmF (measured with an F filter)
10. Wideband Noise ≤ –54 dBmF
11. Longitudinal Noise (Power Influence) < 80 dBrnC   OK
    80–90 dBrnc   Marginal
    > 90 dBrnc   Unacceptable

Range Limits: 26 Gauge / 70°F / PIC Recommended Maximum (DSL Assistant Green Zone)	
1st segment	10.8 kft.
2nd/3rd segment	10.55 kft.

Range Limits: 24 Gauge / 70°F / PIC Recommended Maximum (DSL Assistant Green Zone)	
1st segment	15.25 kft.
2nd/3rd segment	15.05 kft.

Attenuation Limits Recommended Maximum (DSL Assistant Green Zone)		
	Upstream	Downstream
1st segment	31 dB	33 dB
2nd/3rd segment	30 dB	30 dB

NOTE: In three segment circuits (two H4Rs), individual segment resistance values must be verified. Refer to the HDSL4 Deployment Guidelines section of the Installation and Maintenance Practice (P/N 61222426L1-5x) for those guidelines.

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
1in6	Network Arming Pattern. If Smartjack LB is enabled, HTU-R will loop toward network.	No
2in6	H4R LB to Network.	No
3in6	H4R LB to Network.	No
4in6	H4R LB to Customer.	No
5in6	H4R LB to Customer.	No
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.	No
3F06	H4R LB to Customer.	No
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 Network 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) H4TU-C: 231 Errors, H4R #1: 10 Errors, H4R #2: 200 Errors, H4TU-R: 20 Errors	No
D5D6	Loopback Timeout Override: Disables LB timeout. Restores original LB timeout 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.	No
FF06	H4R LB to Network.	No

WARRANTY

ADTRAN will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found at www.adtran.com/warranty. U.S. and Canada customer Faxback: 877-457-5007, Document 414.