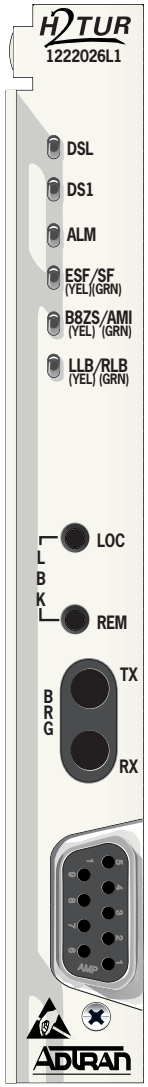
T200 H2TU-R

CLEI: T1L3WVTA_ _



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

STATUS LEDs

DSL	○ Off	No synchronization of H2TU-C and H2TU-R
	● Red	Poor signal quality on the loop (≥ 10^{-7} BER)
	● Yellow	Marginal signal quality on the loop (≤ 2 dB margin above10^{-7} BER)
	● Green	Good signal quality on the loop (> 2 dB margin above10^{-7} BER)
	✲ Flashing	Error detected at H2TU-C or H2TU-R (the color of this LED, when flashing, will match the color representing the loop's signal quality)
DS1	○ Off	Customer-side DS1 signal not detected from customer or is of a format not matching the HDSL2 circuit provisioning
	✶ Flashing	Detected error on the DS1 interface
	● Solid	Customer-side DS1 signal is present and synchronized
ALM	○ Off	No alarm condition detected
	● Red	Local alarm condition (H2TU-R) detected
	● Yellow	Remote alarm condition (H2TU-C) detected
ESF / SF	○ Off	DS1 provisioned for Unframed mode
	● Yellow	DS1 provisioned for ESF framing mode
	● Green	DS1 provisioned for SF framing mode
B8ZS / AMI	● Yellow	DS1 optioned for B8ZS
	● Green	DS1 optioned for AMI
LLB / RLB	○ Off	Unit is not in loopback or armed state
	● Yellow	Active local bidirectional loopback from the H2TU-R toward the customer and network
	✶ Flashing	Unit is armed but not in active loopback condition
	● Green	Active Remote loopback at the H2TU-C toward the customer

LOOPBACK FUNCTIONS

LOC

- Initiates a bidirectional loopback of the H2TU-R toward the network and customer

REM

- Initiates a loopback at the H2TU-C toward the customer

DS1 BRIDGING JACKS

BRIDGING

- If the DS1 test set is optioned for BRIDGING, the bridging jacks provide an nonintrusive tap onto a signal line.

  TX - Monitors signal being received from the customer equipment

  RX - Monitors signal being transmitted to the customer equipment

TERMINATE

- If the DS1 test set is optioned for TERMINATE, the bridging jacks provide an intrusive tap onto a signal line.

  TX - Accesses signal being transmitted to the network

  RX - Accesses signal being received from the network

RS-232 DB-9 CONNECTOR

- Used to access preformance monitoring data, perform loopbacks and provision units via VT100 emulation software such as Hyper Terminal – Private Edition and ProComm Plus.
- 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.

CARD EDGE PINOUTS

Pin	Designation	Description
1	CH GND	Chassis ground
5	DS1-T1	DS1 receive out tip (to customer interface)
7	H1-T	HDSL2 Loop tip (facility)
11	CH GND	Chassis ground
12	GND	Ground for protection switching
13	H1-R	HDSL2 Loop ring (facility)
15	DS1-R1	DS1 receive out ring (to customer interface)
17	-48VR	-48 Vdc Return
20	VCC	+5 Vdc for protection switching
27	CH GND	Chassis ground
35	-48V	-48 Vdc
40	PROT-1	Control line for protection switching
49	DS1-R	DS1 transmit in ring (from customer interface)
55	DS1-T	DS1 transmit in tip (from customer interface)

POWERING OPTIONS

The H2TU-R can be span powered by the H2TU-C, or it can be locally powered with -48 Vdc.

NOTE: If the H2TU-R is being locally powered, ensure that the Span Power option is disabled via the VT100 terminal screens.

■ For a complete Installation and Maintenance Practice: (877) 457-5007, Document #688. Please have your fax number available. ■

HDSL2 TROUBLESHOOTING GUIDE

PRICING AND AVAILABILITY 800.827.0807
TECHNICAL SUPPORT 800.726.8663
RETURN FOR REPAIR 256.963.8722
www.adtran.com
61222026L1-22A

INDICATIONS AND PROBABLE CAUSES

Front panel or circuit parameters indicate abnormal operation

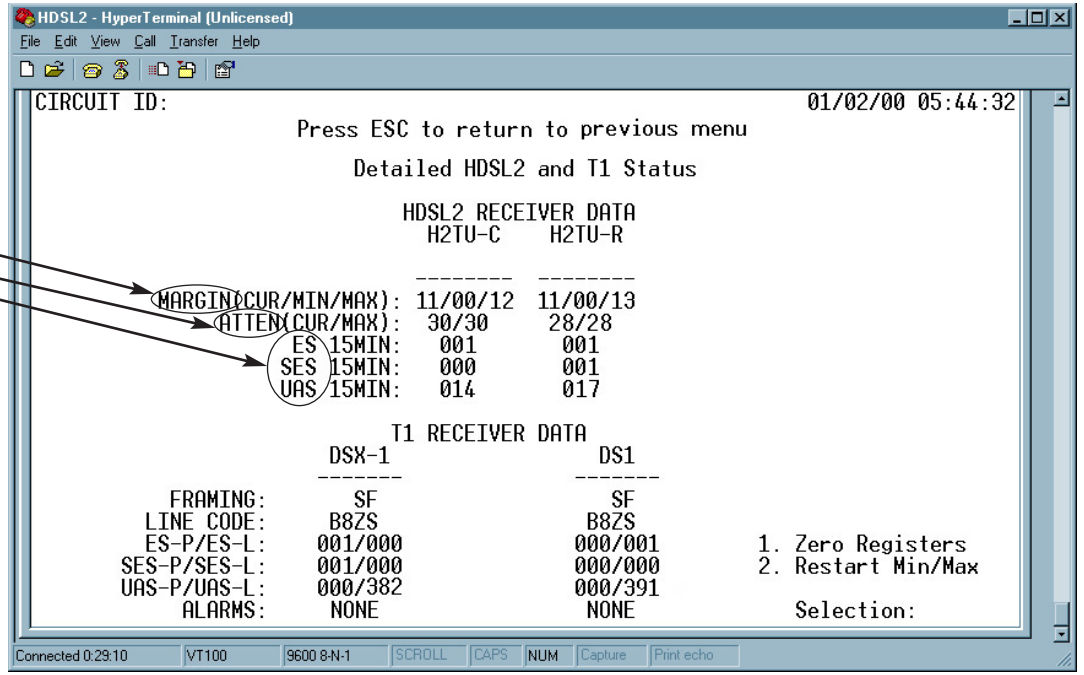
Connect a terminal or PC to the RS-232 (DB-9) craft interface, located on the faceplate. The terminal must be VT100 or compatible and set for 1.2 to 19.2 kbps, 8 data bits, no parity, 1 stop bit, and no flow control. Select "3" from the ADTRAN HDSL2 Main Menu Screen and "2" from the Span Status Screen:

- Is signal margin fluctuating, this would occur when real-time mode is active?
- Is ATTEN (pulse attenuation) > 30 dB?
- Are there any errors counting on the ES, SES, or UAS registers?

If the above conditions do not exist, the circuit should provide quality service. However, if any of the above conditions exist, a cable problem or excessive loss situation is probable and more detailed cable testing should be done to verify all HDSL2 Loop Specifications are met. These conditions may also reflect intermittent cable faults or excessive noise impairments. If intermittent faults or noise impairments are suspected, select "5" from the HDSL2 Main Menu to review Performance History Screen.

Front Panel Indications Under Normal Operation

DSL	● Green
DS1	● Green
ALM	○ Off
ESF/SF	● Yellow (if provisioned for ESF mode)
	● Green (if provisioned for SF mode)
	○ Off (if provisioned for Unframed mode)
B8ZS/AMI	● Yellow (if provisioned for B8ZS line code)
	● Green (if provisioned for AMI line code)
LLB/RLB	○ Off



TROUBLESHOOTING GUIDELINES

Troubleshooting Guide

Condition	Solution
All front panel indicators are Off.	1. Make sure the H2TU-R is properly seated in the housing. 2. Verify that the H2TU-C is delivering sufficient simplex voltage to the loop, if line powered, or that a nominal -48 Vdc is being supplied, if local powered. 3. If Steps 1 and 2 pass, but Step 3 fails, replace the H2TU-R.
Power is present and adequate, but loop sync is not available	1. Verify that the loop conforms with CSA guidelines (not too long, etc.). 2. Verify that loop loss at 196 kHz is not greater than 35 dB. 3. Verify that noise on the HDSL2 loop is within acceptable limits. 4. If steps 1 through 3 pass and loop sync is still not available, replace the unit.

COMPLIANCE CODES

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

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

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 noises ≤ 50 dBrn as measured using a 50 kb filter
- Wideband noise ≤ 31 dBrn as measured using a 50 kb filter

For more information regarding deployment guidelines and applications, reference ADTRAN's *Supplemental Deployment Information for HDSL/HDSL2*, P/N 61221HDSLL1-10.

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 ADT*RAN's U.S. and Canada Carrier Networks Equipment Warranty*: (877) 457-5007, Document #414.