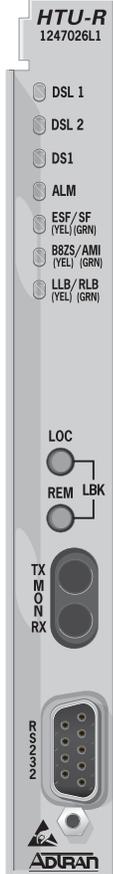


HDSL T200 HTU-R

P/N: 1247026L1
CLEI: T113AAVA_ _



FRONT PANEL LEDES

Label	Status	Description
DSL1/ DSL2	○ Off	No synchronization
	● Green	Signal quality good (4 to 9)
	● Yellow	Signal quality marginal (1 to 3)
	● Red	Signal quality poor (0)
	⊛ Flashing	Error detected at HTU-C or HTU-R. The color, when flashing, indicates loop signal quality
DS1	○ Off	DS1 signal not detected from customer or format does not matching HDSL circuit provisioning
	★ Green Flashing	BPV/frame error (SF)/CRC error detected (ESF)
	● Green	DS1 signal is present and synchronized
ALM	○ Off	No alarm condition detected
	● Yellow	Remote alarm condition (HTU-C) detected
	● Red	Local alarm condition (HTU-R) detected
ESF/SF	○ Off	Unframed mode
	● Green	Unit is currently receiving SF data
	● Yellow	Unit is currently receiving ESF data
B8ZS/AMI	● Green	DS1 provisioned for AMI line coding
	● Yellow	DS1 provisioned for B8ZS line coding
LLB/RLB	○ Off	Unit not in loopback or armed state
	● Green	Active remote loopback from the HTU-C toward the customer and/or network
	★ Yellow Flashing	Unit armed, but not in active loopback condition
	● Yellow	Active local loopback from the HTU-R toward the customer and/or network

PUSHBUTTON LOOPBACK FUNCTIONS (LBK)

- ◆ **LOC:** Initiates bidirectional loopback of HTU-R toward the network and customer
- ◆ **REM:** Initiates loopback at the HTU-C toward the customer

DS1 MONITORING (BANTAM) JACK (MON)

The front panel of the HTU-R contains a metallic bantam jack for DS1 test access.

Monitor

If the DS1 test set is optioned for MONITORING, the monitor jack provides a non-intrusive tap onto the signal line.

- ◆ **TX:** Monitors the data stream being transmitted to the network from the customer
- ◆ **RX:** Monitors the data stream that would be received from the network to the customer

DB-9 CONNECTOR (RS-232)

The DB-9 connector on the front panel is an RS-232 craft interface port for connection to a terminal emulator. Use a VT100 or equivalent terminal and a terminal application such as HyperTerminal (Private Edition) to access performance monitoring data, enable loopbacks, and provision the unit.

There are two types of terminal emulation modes: Manual Update Mode and Real-Time Update Mode. Use CTRL+T to toggle between the two terminal emulation modes.

- ◆ **Manual Update Mode:** Press the space bar three times to manually update the screen. Print Screen and Log File commands are available in this mode.
- ◆ **Real-Time Update Mode (Default):** Print Screen and Log File commands are not available in this mode. Cursor placement and screen highlighting are enabled.

Provision Terminal Port for VT100

- ◆ Data Rate = 1.2 kbps to 19.2 kbps
- ◆ Asynchronous Data Format = 8 data bits, no parity (none), 1 stop bit, and no flow control

NOTE: When using a PC with terminal software, disable any power saving programs.

OPTION SETTINGS DISPLAY

Description	Settings	Default
DSX-1 Transmit Level	0, 133, 266, 399, 533, EXT ⁽¹⁾	0
Line Code	AMI, B8ZS	B8ZS
DSX-1 Framing	AUTO, UNF, ESF, SF, Forced Conversion	AUTO
NIU Loopback	EN, DIS	EN
New England 1:6 LPBK	EN, DIS	DIS
Loopback Timeout	NONE, 60 MIN, 120 MIN	120 MIN
Customer Loss Response	AIS, CDI, LPBK	AIS
Latching Loopback Mode	T1, FT1	T1
Performance Reporting Message	NPRM, SPRM, NONE, AUTO	AUTO
DS1 Transmit Level ⁽²⁾	0 dB, -15 dB	0 dB
Shelf Alarm ⁽³⁾	EN, DIS	EN
Span Power ⁽⁴⁾	EN, DIS	EN

1. External option only available when using 220 HTU-C (1247001L6). It is the default option setting when used with this form factor.
2. The 01 - 24 should be one line. DS0 Blocking (XX = Blocked): 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
3. Shelf Alarm only available when using DDM+ HTU-C or 3192 (124x003L6 or 124x004L6).
4. Span Power is an option that is only valid for the HTU-C and will not display on the HTU-R user interface.

OPTION JUMPER

P3 sets the DS1 NIU 60 mA Current Setting as follows:

- ◆ Off disables the constant current source for the DS1 NIU.
- ◆ On Enables the 60 mA constant current source for the DS1 NIU.

INSTALLATION AND TURN-UP

After unpacking the unit, inspect it for damage. If damage is noted, file a claim with the carrier and then contact ADTRAN. Refer to Warranty.

NOTE: This unit can be provisioned via the RS-232 port or remotely via inband codes.

1. Set the option jumper according to the specific circuit design.
2. Install the HTU-C and HTU-R.



3. The DSL1/DSL2 LED should be green on the HTU-C and HTU-R. The DSX LED should be green on the HTU-C and the DS1 LED should be green on the HTU-R. The ALM LED on both units should be dark.
 - HTU-C displays LLOS if not connected to network (no DSX present; LED solid red).
 - HTU-R has red **ALM** LED if customer not connected. LP1, LP2, line coding (B8ZS or AMI) and framing (ESF or SF) (if not UNFR) LEDs should light.
4. If the Status LED is green, do the following:
 - Verify that the signal quality is the same on each loop. Ensure signal quality indicators do not fluctuate.
 - Verify that the loop loss is within design limits. If there is a difference of more than 1 dB between the two loops, a problem exists with the cable pairs.
 - If errors occur, use the Current System Status and Performance History screens to determine where they are occurring. For more information, refer to “Troubleshooting”.
5. If everything checks out, proceed with BERT testing.

EDGE PIN ASSIGNMENTS

Pin	Designation	Description
1, 11, 27	CH GND	Chassis ground
5	DS1-T1	DS1 receive out tip (to customer interface)
7	H1-T	HDSL Loop 1 tip (facility)
12	GND	Ground for protection switching
13	H1-R	HDSL Loop 1 ring (facility)
15	DS1-R1	DS1 receive out ring (to customer interface)
20	VCC	+5 VDC for protection switching
40	PROT-1	Control line for protection switching
41	H2-T	HDSL Loop 2 tip (facility)
47	H2-R	HDSL Loop 2 ring (facility)
49	DS1-R	DS1 transmit in ring (from customer interface)

TROUBLESHOOTING

The HTU-C ALM LED is yellow, but no errors are indicated by the HTU-R:

- ◆ A BPV, Frame error (SF) or CRC error (ESF) was detected at the DSX-1 interface. This indicates a possible network or wiring problem between the HTU-C and the DSX. This does not indicate problems on the HDSL loops.

The HTU-R DS1 LED is flashing, but the HTU-C indicates no errors:

- ◆ A BPV, Frame Error (SF) or CRC Error (ESF) was detected at the DS1 interface. This indicates a Frequency Maximum (Hz) Loss Data (dB) wiring problem, or a B8ZS/AMI mismatch between the HTU-R and the customer equipment. This does not indicate problems on the HDSL loops.

The HTU-R has power, but the DSL1/DSL2 LEDs are dark. The unit cannot sync with the HTU-C:

- ◆ Simplex power for powering the HTU-R can be passed over cable pairs that contain load coils or that are too long for HDSL synchronization. Using a TIMS, verify the circuit is within design limits.
- ◆ The HTU-R will power up if there is at least one good conductor on each loop. To test, remove the protector plug at the MDF and measure t-r resistance to the HTU-R on both loops. The HTU-R places a 3-ohm short between t-r on both loops. An extremely high impedance indicates an open conductor. An extremely low reading on one loop may indicate a t-r short in the field. In the field, measure t-t and t-r voltage with the

HTU-C installed and compare to the t-t voltage chart. The absence of these voltages indicates open pairs or mis-wiring. As with other circuits, use standard resistance measurements between each conductor and ground to test for a grounded conductor.

- ◆ A high resistance open that degrades to where it causes the circuit to lose sync can be “resealed” by reseating the HTU-C. Test the cable pairs before reseating the HTU-C.

Running excessive errors on the loop:

- ◆ Measure t-r resistance (refer to above). If the pairs are unbalanced by more than 4 ohms, or a measurement varies significantly, this could indicate a high resistance open or an intermittent fault on the loop with the higher measurement. A TDR is typically required to locate this splice for repair.
- ◆ Excessively long bridged taps can also cause errors. Check the records and/or use a TDR to verify the location and length of bridged taps.
- ◆ Using the Performance History screen, it is often possible to see that many more errors are being received on a particular loop or at a particular unit. The fault will typically be very close to the unit receiving the most errors.

No power at the HTU-R:

- ◆ This could be caused by a loop with two open conductors. Measure t-r resistance from the MDF to the HTU-R or use the voltage chart to see which pair is open.

Circuit Parameters Under Normal Operation

- ◆ LOSS ≤ 30 dB
- ◆ Signal quality ≥ 4 (DSL1/DSL2 LEDs green), with no fluctuation and equal on both loops
- ◆ All HDSL Deployment Guidelines are met

HDSL 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 ≤ 35dB
- ◆ Pulse attenuation (LOSS on HDSL current system status screen) ≤ 30dB
- ◆ Maximum loop resistance is 130 Ω
- ◆ Impulse noises ≤ 50 dBm, as measured using a 50 kb filter
- ◆ Wideband noise ≤ 31 dBm, as measured using a 50 kb filter

COMPLIANCE

Refer to the *HDSL T200 HTU-R, Span Powered, 60 mA Compliance Notice (P/N 61247026L1-17)* for detailed compliance information.