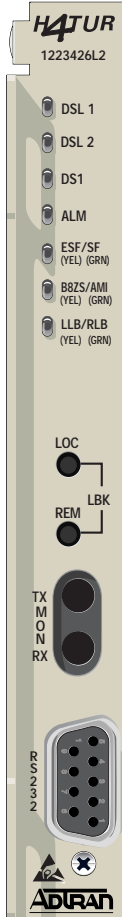


## HDSL4 T200 H4TU-R

P/N 1223426L2  
CLEI: T1L85M7C\_



### FRONT PANEL LED STATUS

<b>DSL1/DSL2</b>	<span style="color: green;">●</span> Green	Loop 1/Loop 2 synchronization achieved and signal is present No errors currently detected, and SNR margin $\geq$ 3 dB
	<span style="color: red;">●</span> Red	Loop 1/Loop 2 synchronization not achieved, in sync with errors, or SNR margin $<$ 3 dB
<b>DS1</b>	<span style="color: green;">●</span> Green	DS1 signal present and no errors currently detected
	<span style="color: red;">●</span> Red	No DS1 signal, or signal present with errors
<b>ALM</b>	<input type="radio"/> Off	No active alarm present
	<span style="color: yellow;">●</span> Yellow	Loss of DSX-1 signal from the network
	<span style="color: red;">●</span> Red	Loss of DS1 signal from the customer (CPE)
<b>ESF/SF</b>	<input type="radio"/> Off	Unit is provisioned for UNFRAMED data
	<span style="color: green;">●</span> Green	Unit is provisioned for SF data
	<span style="color: yellow;">●</span> Yellow	Unit is provisioned for ESF data
<b>B8ZS/AMI</b>	<span style="color: green;">●</span> Green	Unit is provisioned for AMI line code
	<span style="color: yellow;">●</span> Yellow	Unit is provisioned for B8ZS line code
<b>LLB/RLB</b>	<input type="radio"/> Off	No local loopbacks active
	<span style="color: yellow;">●</span> Yellow	Local loopback active
	<span style="color: green;">●</span> Green	Active loopback at the H4TU-C toward the customer

### OPTIONS

#### Front Panel Pushbuttons

**LOC** Initiates a bidirectional loopback of the T200 H4TU-R toward the network and customer  
**REM** Initiates a loopback at the H4TU-C toward the customer

#### DS1 MONITOR JACKS

**TX** DS1 signal from the DCP toward network (nonintrusive)  
**RX** DS1 receive from the local loop (nonintrusive)

### POWER

This specific unit is intended for Span Power Only. The H4TU-C provides -190 VDC span powering voltage and will provide powering to the H4Rs and the H4TU-R.  
 If a locally powered unit is required, refer to P/N 1223424L2.

### COMPLIANCE

This product is intended to be installed in Restricted Access Areas only and in equipment with a Type "B" or "E" enclosure.

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

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

**WARNING:** Up to -200 VDC may be present on telecommunications wiring. Ensure Chassis ground is properly connected.

### DEFAULT PROVISIONING VALUE

The T200 H4TU-R assumes settings of the H4TU-C. Options are shown here for reference only.

Provisioning Options	Settings	Default
DSX-1 Line Build Out	EXT, 0, 133, 266, 399, 533	0-133 ft. *
DSX-1 Line Code	AMI, B8ZS	B8ZS
DSX-1 Framing	SF, ESF, Unframed, Auto	ESF
Forced Frame Conversion	EN, DIS	DIS
Smartjack Loopback	EN, DIS	DIS
Loopback Timeout	None, 120 minutes	120 minutes
Latching Loopback Mode	T1 (Disabled), FT1 (Enabled)	T1 (Disabled)
DS1 Transmit Level	0 dB, -7.5 dB, -15 dB	0 dB
Span Power	EN, DIS	EN
Customer Loss Indicator	AIS, AIS/CI, Loopback	AIS/CI
PRM Setting	None, SPRM, NPRM, Auto	Auto
Loop Atten Alarm Threshold	O. Disabled 1-99. Alarm Threshold in dB	34 dB
SNR Margin Alarm Threshold	O. Disabled 1-15. Alarm Threshold in dB	4 dB
Remote Provisioning	EN, DIS	EN

\* EXT is used only for Kentrox shelves. Unit transmits 12-volt p-p to DSX panel.

### FEATURES

#### TScan

The ADTRAN® T200 H4TU-R incorporates the TScan™ feature. TScan allows for remote retrieval of circuit diagnostics and performs advanced fault location. For more information about TScan refer to the Installation and Maintenance practice.

#### Bad Splice Detection

The Runtime TScan bad splice detection feature is an ADTRAN proprietary non-intrusive method for detection of anomalies (bad splices) in the copper plant. This feature non-intrusively monitors the cable pair during runtime for the presence of bad splices, which may potentially impact service. Poor splices in the cable are often undetected by normal testing methods. Often, these splices present no problem for the data transmission equipment until the point at which oxidation with the splice itself causes a rapid impedance change. Such a change in impedance may cause errors, signal margin fluctuation, and/or a retrain of the DSL transceivers. The splice detection feature is accessed from the Troubleshooting Screen via the craft access port.

#### Fault Bridging

Fault Bridging minimizes downtime due to an intermittent impairment (GFI, short, micro-interruption, bad splice, noise burst, etc.) that appears on the cable pair. This allows the DSL transceivers to maintain synchronization during an interruption, thus avoiding a retrain. Depending on the impairment, interruptions as long in duration as 200 ms can be bridged.

#### Fast Retrain

Fast Retrain is an ADTRAN proprietary feature that minimizes downtime due to an intermittent impairment which due to its duration cannot be bridged. When such impairments occur, the fast retrain feature will be invoked to restore service within 5 to 7 seconds, instead of the traditional 25 to 30 second retrain duration.

**NOTE:** Fast-Retrain capable units must be installed on both ends of the circuit for this feature to function properly. Also, if there is a failure, for any reason, of a fast retrain attempt then the traditional (25-30 second) retrain will be initiated.



# T200 HDSL4 Transceiver Unit, Remote-Span Powered

PRICING AND AVAILABILITY 800.827.0807  
 TECH SUPPORT 800.726.8663  
 RETURN FOR REPAIR 256.963.8722  
 www.adtran.com  
 61223426L2-22B

## TROUBLESHOOTING HDSL4

This ADTRAN HDSL4 unit is equipped with troubleshooting-at-a-glance LEDs (identified on the reverse side of this document) that provide customers with a simple means of identifying the location of certain faults. Additionally, screens available via the craft interface simplify the trouble isolation process. These screens and their associated benefits are described below.

### Troubleshooting Screen

Available via the Main Menu: provides ADTRAN contact information and access to the Troubleshooting Guidance and General Information screens.

### Troubleshooting Guidance Screens

Available via the Troubleshooting screen: detects and displays errors and/or alarms at any of the monitored inputs (DSX1, DS1 and HDSL). Guidance on the fault(s) detected includes possible cause(s) and suggested actions, including those shown below:

DSX-1/DS1:		Facility:	
LOS	Loss of signal (Red Alarm) at the DSX-1/DS1 receiver	GROUND	Ground Fault on span (facility pair grounded)
CLK	T1 receive clock is out of range	SHORT	Short circuit (or low impedance) between pairs
RAI	Remote Alarm Indication (Yellow Alarm) detected at DSX-1/DS1 receiver	OPEN	Open circuit between facility pairs
AIS	Alarm Indication Signal (Blue Alarm) detected at DSX-1/DS1 receiver	<b>DSL:</b>	
ERR	Errors recorded at DSX-1/DS1 receiver	LOS	Loss of HDSL sync
		MARG	Margin has exceeded the alarm threshold
		ATTEN	Attenuation has exceeded the alarm threshold
		ERR	Errors recorded at the HDSL receiver
		HIST	Performance History of the DSL units

### General Information Screen

Available via the Troubleshooting screen: a reference page which displays the minimum acceptable signal margin, maximum attenuation, and other deployment parameters for this HDSL4 circuit.

**NOTE:** Along with the Troubleshooting screens, the Detailed Status screen and Performance History screen, available via the craft access terminal, provide both real-time and historical view of this circuit.

For complete deployment guidelines on the HDSL4 circuit, refer to the Installation and Maintenance Practice referenced on the front page.

ATTENUATION LIMITS		
Segment	Recommended Maximum	
	Upstream	Downstream
1 <sup>st</sup> segment	30 dB	32 dB
2 <sup>nd</sup> and 3 <sup>rd</sup> segment	28 dB	28 dB

RANGE LIMITS, PIC Cable, 70°F	
Gauge/Segment	Recommended Maximum
26 Gauge, 1 <sup>st</sup> segment	10,470 ft.
26 Gauge, 2 <sup>nd</sup> and 3 <sup>rd</sup> segment	9,865 ft. <sup>1,2</sup>
24 Gauge, 1 <sup>st</sup> segment	14,770 ft.
24 Gauge, 2 <sup>nd</sup> and 3 <sup>rd</sup> segment	14,050 ft. <sup>1,2</sup>

<sup>1</sup> In three segment circuits (two H4Rs), individual segment resistance values *must be verified*. Refer to the Installation and Maintenance Practice for details and calculations.

<sup>2</sup> When designing a dual H4R loop (three segment), the first segment should have lower DC resistance than the second segment.

## LOOPBACK 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.	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](http://www.adtran.com/warranty).