HDSL4
T200 H4TU-R

P/N 1223424L2
CLEI: T1L83Z3C_ _

H4TUR

1223424L2
LOCAL

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

LOC
LBK
REM

TX
M
O
N
RX

RS
232

ADTRAN

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

HANDLING PRECAUTIONS REQUIRED.
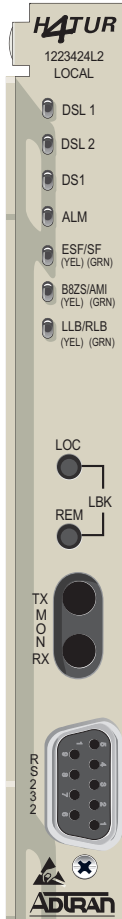
FRONT PANEL LED STATUS

DSL1/DSL2	🟢	Green	Loop 1/Loop 2 synchronization achieved and signal is present No errors currently detected, and SNR margin ≥ 3 dB
	🔴	Red	Loop 1/Loop 2 synchronization not achieved, in sync with errors, or SNR margin < 3 dB
DS1	🟢	Green	DS1 signal present and no errors currently detected
	🔴	Red	No DS1 signal, or signal present with errors
ALM	⚪	Off	No active alarm present
	🟡	Yellow	Loss of DSX-1 signal from the network
	🔴	Red	Loss of DS1 signal from the customer (CPE)
ESF/SF	⚪	Off	Unit is provisioned for UNFRAMED data
	🟢	Green	Unit is provisioned for SF data
	🟡	Yellow	Unit is provisioned for ESF data
B8ZS/AMI	🟢	Green	Unit is provisioned for AMI line code
	🟡	Yellow	Unit is provisioned for B8ZS line code
LLB/RLB	⚪	Off	No local loopbacks active
	🟡	Yellow	Local loopback active
	🟢	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 **Local Power Only**. If a Span Powered unit is required, refer to P/N 1223426L2.
A local power supply is available from ADTRAN by ordering P/N 1353.DSK48V04.

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	C	C
Telecommunication Code (TC)	X	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.***

CARD EDGE PINOUTS

Pin	Designation	Description
1	CH GND	Chassis ground
5	DS1-T1	DS1 receive out tip (to customer interface)
7	H1-T	HDSL4 Loop tip (facility)
11	CH GND	Chassis ground
13	H1-R	HDSL4 Loop ring (facility)
15	DS1-R1	DS1 receive out ring (to customer interface)
17	48 VR	48 VDC Return
20	VCC	+5 VDC for protection switching
27	CH GND	Chassis ground
35	48 V	48 VDC; range ±24 to ± 56 VDC (48 VDC nominal)
41	H2-T	HDSL4 Tip (Loop 2)
47	H2-R	HDSL4 Ring (Loop 2)
49	DS1-R	DS1 transmit in ring (from customer interface)
55	DS1-T	DS1 transmit in tip (from customer interface)

PROVISIONING OPTIONS

Provisioning options are assumed from settings made at the H4TU-C.

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.

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.*

ADTRAN®

T200 HDSL4 Transceiver Unit, Remote-Local Powered

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61223424L2-22B

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:

LOS	Loss of signal (Red Alarm) at the DSX-1/DS1 receiver
CLK	T1 receive clock is out of range
RAI	Remote Alarm Indication (Yellow Alarm) detected at DSX-1/DS1 receiver
AIS	Alarm Indication Signal (Blue Alarm) detected at DSX-1/DS1 receiver
ERR	Errors recorded at DSX-1/DS1 receiver

Facility:

GROUND	Ground Fault on span (facility pair grounded)
SHORT	Short circuit (or low impedance) between pairs
OPEN	Open circuit between facility pairs

DSL:

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
1st segment	30 dB	32 dB
2nd and 3rd segment	28 dB	28 dB

RANGE LIMITS, PIC Cable, 70°F

Gauge/Segment	Recommended Maximum
26 Gauge, 1st segment	10,470 ft.
26 Gauge, 2nd and 3rd segment	9,865 ft. [1,2]
24 Gauge, 1st segment	14,770 ft.
24 Gauge, 2nd and 3rd segment	14,050 ft. [1,2]

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

[2] 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	H4R1 LB to Network.	No
3in6	H4R2 LB to Network.	No
4in6	H4R1 LB to Customer.	No
5in6	H4R2 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	H4R1 LB to Customer.	No
3F06	H4R2 LB to Customer.	No
3F08	H4R3 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	H4R1 loopback pattern. 10 bit error injection.	Yes
C742	H4TU-R loopback pattern. 20 bit error injection.	Yes
C754	H4R2 loopback pattern. 200 bit error injection.	Yes
C743	H4R3 loopback pattern. 30 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, H4R1: 10 Errors, H4R2: 200 Errors, H4R3: 30 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	H4R1 LB to Network.	No
FF06	H4R2 LB to Network.	No
FF08	H4R3 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.

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