ADTRAN®

T200 HDSL4
H4R Repeater

JOBAID

61223441L2-22B
0905

T200 HDSL4
H4R

P/N: 1223441L2
CLEI: T1RAAAAB_ _
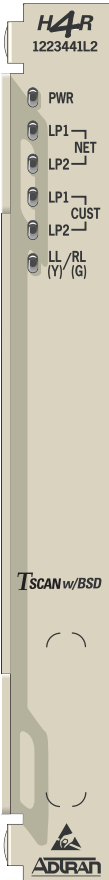
H4R
1223441L2

- PWR
- LP1 ⌐ NET
- LP2 ⌐
- LP1 ⌐ CUST
- LP2 ⌐
- LL /RL (Y) /(G)

*T*SCAN *w/BSD*

ADTRAN

LED STATUS INDICATORS

Label	Indication	Description
PWR	○ Off	No span power is present
	● On	Span power is present
LP1/LP2 NET	○ Off	No span power is present
	● Solid Green	Synchronized with an Signal to Noise Ratio (SNR) margin greater than the SNR Margin Alarm Threshold
	✳ Green Fast Flashing	Flashing three times per second indicates attempt to synchronize with the H4TU-C
	✳ Green Slow Flashing	Flashing once per second indicates synchronization with a SNR margin greater than the SNR Margin Alarm Threshold; attenuation is greater than the Loop Attenuation Alarm Threshold
	● Solid Yellow	Synchronized with a SNR margin greater than 0 dB, but less than the SNR Margin Alarm Threshold
	✴ Yellow Flashing	Synchronized with a SNR margin greater than 0 dB, but less than the SNR Margin Alarm Threshold; attenuation is greater than the Loop Attenuation Alarm Threshold
	● Solid Red	Synchronized with a SNR margin of 0 dB
	✳ Red Flashing	Flashing once per second indicates synchronization with a SNR margin of 0 dB; attenuation is greater than the Loop Attenuation Alarm Threshold
LP1/LP2 CUST	○ Off	No span power is present
	● Solid Green	Synchronized with an Signal to Noise Ratio (SNR) margin greater than the SNR Margin Alarm Threshold
	✳ Green Fast Flashing	Flashing three times per second indicates attempt to synchronize with the H4TU-R
	✳ Green Slow Flashing	Flashing once per second indicates synchronization with a SNR margin greater than the SNR Margin Alarm Threshold; attenuation is greater than the Loop Attenuation Alarm Threshold
	● Solid Yellow	Synchronized with a SNR margin greater than 0 dB, but less than the SNR Margin Alarm Threshold
	✴ Yellow Flashing	Synchronized with a SNR margin greater than 0 dB, but less than the SNR Margin Alarm Threshold; attenuation is greater than the Loop Attenuation Alarm Threshold
	● Solid Red	Synchronized with a SNR margin of 0 dB
	✳ Red Flashing	Flashing once per second indicates synchronization with a SNR margin of 0 dB; attenuation is greater than the Loop Attenuation Alarm Threshold
LL/RL	● Solid Green	A loopback is active at the H4R towards the H4TU-R
	● Solid Yellow	A loopback is active at the H4R towards the H4TU-C
	✴ Yellow Flashing	H4R is armed but not in loopback

H4R CARD EDGE PIN ASSIGNMENTS

Pin	Description	Loop
1	Chassis Ground	n/a
5	HDSL4 Loop Tip (Customer)	Loop 1
7	HDSL4 Loop Tip (Network)	Loop 1
11	Chassis Ground	n/a
13	HDSL4 Loop Ring (Network)	Loop 1
15	HDSL4 Loop Ring (Customer)	Loop 1
17	–48 VDC Return (Ground)	n/a
27	Chassis Ground	n/a
41	HDSL4 Loop Tip (Network)	Loop 2
47	HDSL4 Loop Ring (Network)	Loop 2
49	HDSL4 Loop Ring (Customer)	Loop 2
55	HDSL4 Loop Tip (Customer)	Loop 2

UNIT RESISTANCE

The H4R Tip-to-Ring resistance is approximately 6 Ω for each pair (with no power applied).

LOOPBACK AND CONTROL CODES

Refer to the Installation and Maintenance Practice of the H4TU-C or H4TU-R used in the circuit for a list of loopback codes.

HDSL4 LOOP SPECIFICATIONS FOR OPTIMUM OPERATION

NOTE: The H4TU-Cs (P/N 1221401L6, 1221403L6, 1221404L6) support only one repeater in the HDSL4 circuit.

Refer to the H4TU-C or H4TU-R Installation and Maintenance Practice for loop parameters, including Attenuation and Resistance Budgets for span powering.

H4TU-C	H4R1	H4R2	H4TU-R

1st Segment | 2nd Segment | 3rd Segment
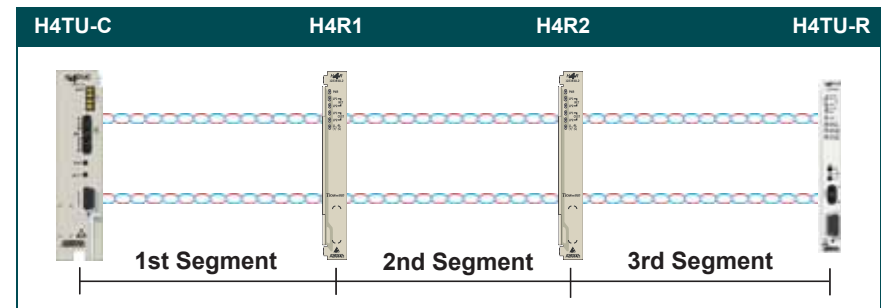
T200 HDSL4
H4R Repeater

PRICING AND AVAILABILITY 800.827.0807
TECH SUPPORT 800.726.8663
RETURN FOR REPAIR 256.963.8722
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ADTRAN RELATED HOUSINGS

The table below lists the ADTRAN-related housings.

Pin	Description
1150043L1	Four slot, Air-filled
1150043L2	Four slot, Gel-filled
1150087L1	T400, single slot (above ground only)

FEATURES

TScan

The H4R incorporates the TScan™ feature, which allows for remote retrieval of circuit diagnostics and performance of advanced fault location. For more information, refer to the Installation and Maintenance practice.

Fault Isolation

Isolation relays are normally open without span powering. Once span powering is detected on the network-side, the H4R monitors the customer-side to determine if a short or ground fault condition exists. If no short or ground fault is detected, the H4R will close the relay, allowing span powering to pass from the network to the customer side.

Ground Fault or Short Detection

If a short or ground fault is detected, the H4R will keep the relays open and continue to monitor the customer side interface until the fault condition clears. During the fault condition, the network-side of that repeater can function normally, allowing for synchronization and loopback/sectionalization testing up to that repeater.

While the short or ground fault condition is present on the customer side of the repeater, the H4R places a nominal −37 VDC on the customer side, and every three seconds, will actively monitor the customer-side for the fault to clear. Once the H4R detects that the condition is clear, the relays close, allowing span powering to pass to the customer side.

NOTE: The isolation process is only possible if the apparatus case is properly grounded

Fault Bridging

The Fault Bridging feature minimizes downtime due to intermittent impairments that appear on the cable pair, for example, from a ground fault interruption (GFI), short, micro-interruption, bad splice, or noise burst. This feature allows the DSL transceivers to maintain synchronization during an interruption, thus avoiding a 25 to 30 second retrain. Depending on the type of impairment, interruptions up to 200 ms can be bridged.

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 that can potentially impact service. Poor cable splices are often undetected by normal testing methods. Often, these splices present no problem for the data transmission equipment until oxidation with the splice itself causes a rapid impedance change, which can cause errors, signal margin fluctuation, and retrain of the DSL transceivers. The splice detection feature is accessed from the Troubleshooting screen through the craft access port.

Fast Retrain

Fast Retrain is an ADTRAN-proprietary feature that minimizes downtime due to an intermittent impairment (bad splice, noise burst, etc.).

When such impairments occur after achieving HDSL synchronization, Fast Retrain is invoked to restore service within 5 to 7 seconds. This short retrain time allows for reduced downtime compared to the traditional 25 to 30 second retrain duration.

NOTE: For proper functionality, install Fast Retrain-capable units on both ends of the circuit. Failure of a Fast-Retrain attempt initiates the traditional (25-30 second) retrain.

COMPLIANCE

Refer to the *T200 HDSL4 H4R Repeater Compliance Notice* (P/N 61223441L2-17) for detailed compliance information.