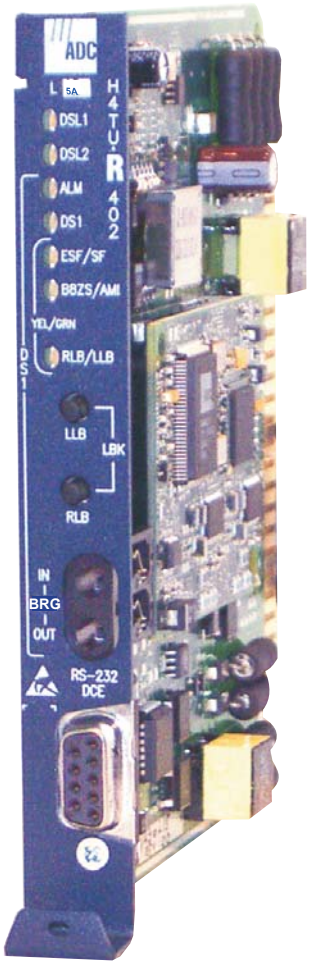
QUICK INSTALLATION



HIGAIN
H4TU-R-402 LIST 5A
(LINE & LOCAL POWER)
REMOTE UNIT

THE H4TU-R-402 LIST 5A

The H4TU-R-402 List 5A (H4TU-R) functions as the remote end of a T1 transmission system. The H4TU-R, when used in conjunction with an HDSL4 line unit (H4TU-C), transmits a 1.544 Mbps T1 payload a maximum distance of 12 kft. over two unconditioned copper pairs (26 AWG). Three powered spans are supported.

FEATURES

Front panel: status LEDs, craft port for maintenance screen access, DS1 monitor jacks, and LLB and RLB loopback pushbuttons for activating loopback commands

Maintenance screens for inventory, provisioning, performance monitoring, and troubleshooting, including:

- Remote provisioning through TL1 FDL commands
- Loop attenuation and insertion loss reporting
- HDSL4 Loop reversal indication
- Power Back Off (PBON and PBOC) for configuring HDSL4 transmit power to reduce crosstalk
- Performance Report Messaging (SPRM, NPRM, and AUTO)

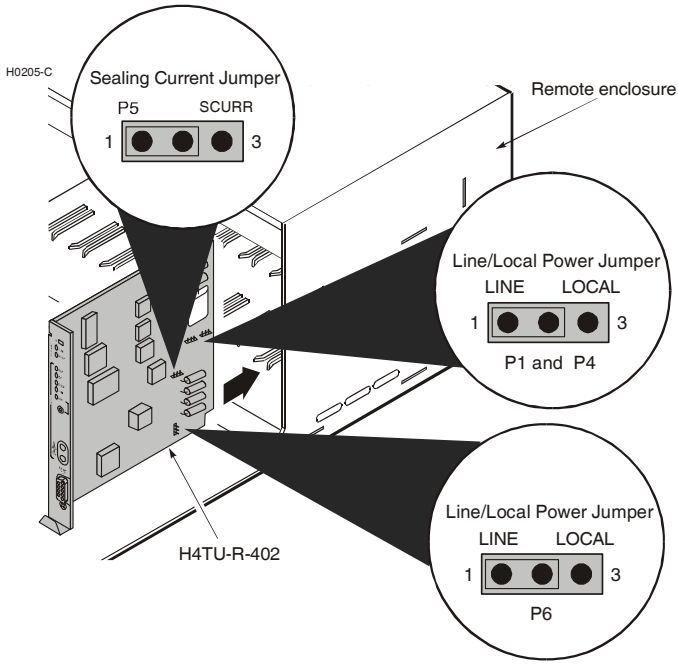
Power: local or line

Doubler support for up to three spans

SPECIFICATIONS

Operating Temperature	-40°F to +149°F (-40°C to + 65°C)
Operating Humidity	5% to 95% non-condensing
HDSL4 Span Voltage	0, 185 Vdc (Voltage is applied across Loop 1 and Loop 2.)
Line or Local Power Consumption	5 Watts
Sealing Current Option	Sinks 10 mA sealing current from H4TU-C.
Electrical Protection	Secondary surge and power cross-protection (all DS1 and HDSL4 ports)
Mounting	Any 200 mechanics shelf
HDSL4 Line Rate	784 kbps Overlapped Pulse Amplitude Modulation (OPAM) transmission per pair
HDSL4 Output	+14.1 dBm ±0.5 dBm, 135Ω
DSX-1 Pulse Output	6 $V^{pk\text{-}pk}$, pre-equalized for 0 to 655 feet of ABAM cable
Maximum Insertion Loss (at KHz)	Span 1 = 47 dB, Span 2 and Span 3 = 43 dB
Maximum Loop Attenuation	Span 1 = 34 dB, Span 2 and Span 3 = 31 dB
DSX-1 Input Level	+1.5 dB to -7.5 dB DSX
DSX-1 Line Rate	1.544 Mbps ±200 bps
DSX-1 Line Format	Alternate Mark Inversion (AMI) or Bipolar with 8-zero Substitution (B8ZS)
DSX-1 Frame Format	Extended SuperFrame (ESF), SuperFrame (SF), or Unframed (UNFR)

1 INSTALLATION



Wear an antistatic wrist strap when installing the H4TU-R. Avoid touching components on the circuit board.

Align the H4TU-R with the enclosure slot guides and slide the unit in until it touches the backplane card-edge connector. Place your thumbs on the front panel and push the H4TU-R into the card-edge connector.

1 Configure the H4TU-R for line or local power, as follows:

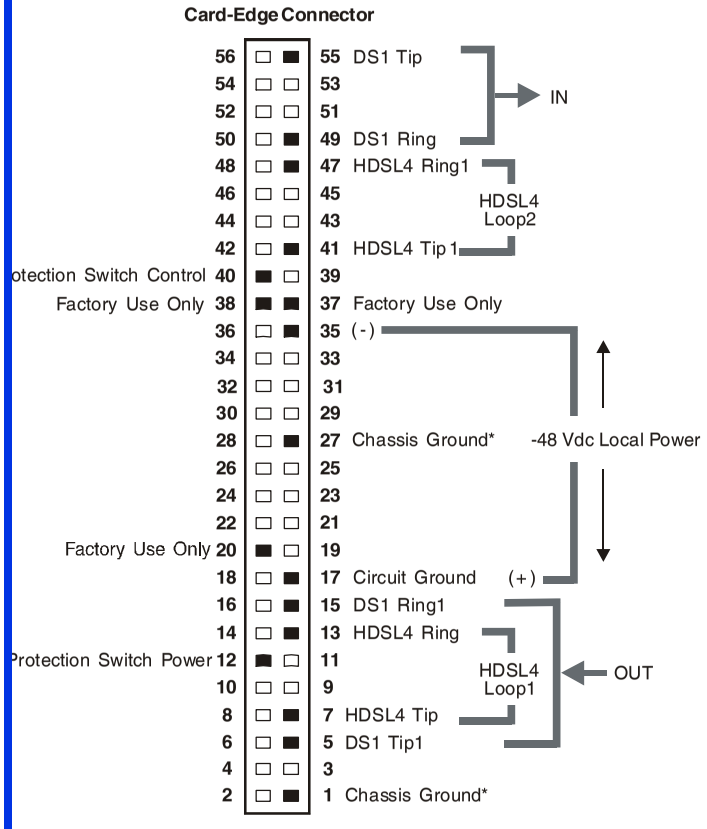
- For line power, place a jumper on pins 1 and 2 of P1, P4 and P6.
- For local power, place a jumper on pins 2 and 3 of P1, P4 and P6.

2 Check the setting of the Sealing Current (SCURR) jumper (P5). The default setting is disabled (jumper on pins 1 and 2). If the unit is locally powered and your application requires sealing current, place a jumper on pins 2 and 3.

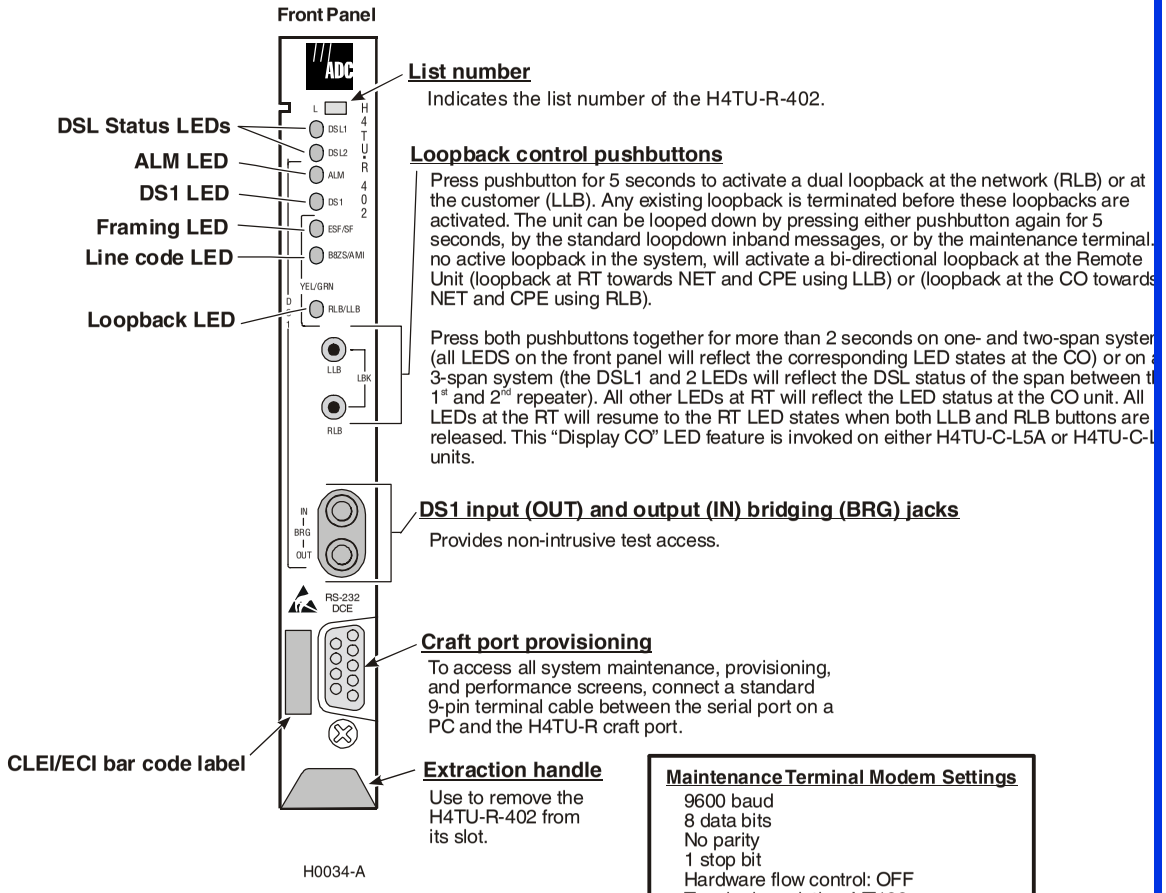
3 Align the unit with the enclosure slot guides and slide the unit in. Push the unit back until it touches the backplane card-edge connector.

Place your thumbs on the front panel and push the unit into the card-edge connector.

Continued



*Chassis Ground may be tied to earth ground per local practice.
Note: Active pins are highlighted in black.



2 VERIFICATION

Once the H4TU-R is installed, verify that it is operating properly by monitoring the Status LEDs on the front panel.

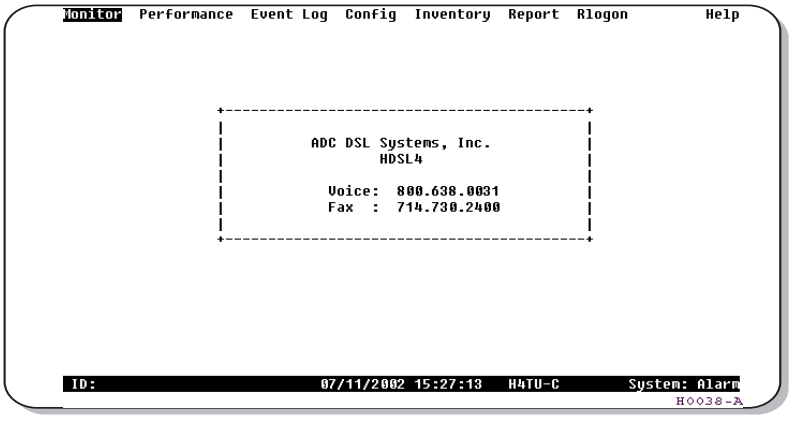
Table 1. *LED Status and Functions*

LED/Status	Function
DSL1	
OFF	No power is applied to the H4TU-R.
Solid green	Loop 1 connected to the H4TU-R has synchronized without error.
Flashing red once every second	Loop 1 of the H4TU-R is in acquisition.
Solid red	Loop 1 connected to the H4TU-R detects HBER or MARG alarms.
Flash red once every two seconds	Download session in progress.
DSL2	
OFF	No power is applied to the H4TU-R.
Solid green	Loop 2 connected to the H4TU-R has synchronized without error.
Flashing red once every second	Loop 2 of the H4TU-R is in acquisition.
Solid red	Loop 2 connected to the H4TU-R detects HBER or MARG alarms.
Flash red once every two seconds	Download session in progress.
ALM	
OFF	Normal operation: the DS-1 signal is present at both the H4TU-R and H4TU-C.
Solid yellow	LLOS is present at the H4TU-C.
Solid red	RLOS is present at the H4TU-R.
DS1	
Solid green	Normal operation: the DS1 signal at the H4TU-R is error free.
Solid red	RLOS, BPV, frame error, or CRC is detected at the H4TU-R.
ESF/SF	
OFF	Unframed DS1 present at the H4TU-R or no DS1 is detected at the H4TU-R.
Solid yellow	ESF frame formatting is present at the H4TU-R.
Flashing yellow once per second	ESF frame formatting and frame error/CRC are present at the H4TU-R.
Solid green	SF frame formatting is present at the H4TU-R.
Flashing green once per second	SF frame formatting and frame error are present at the H4TU-R.
B8ZS/AMI	
OFF	No DS-1 signal is present at H4TU-R.
Solid yellow	B8ZS line code is provisioned at the H4TU-R.
Flashing yellow once per second	B8ZS and excess zeros string are present at the H4TU-R.
Solid green	AMI line code is provisioned at the H4TU-R.
Flashing green once per second	AMI and BPV are present at the H4TU-R.
RLB/LLB	
OFF	H4TU-R is not ARMed or in loopback.
Solid yellow	H4TU-C is looped back toward the network or customer.
Flashing yellow once per second	System is ARMed.
Solid green	H4TU-R is looped back toward the network or customer.

3 LOGGING ON TO THE MAIN MENU

The H4TU-R supports local and remote logon through a maintenance terminal (ASCII terminal or a PC running terminal emulation software) connected to the craft port on the H4TU-R front panel.

Logging on creates menus and screens for the H4TU-R that are replications of those viewed at the H4TU-C. Once logged on, you can view system settings and inventory, initiate loopbacks, monitor performance, and configure the circuit.



To log on using a maintenance terminal:

1 Press CTRL + R to refresh the Logon screen, if necessary.

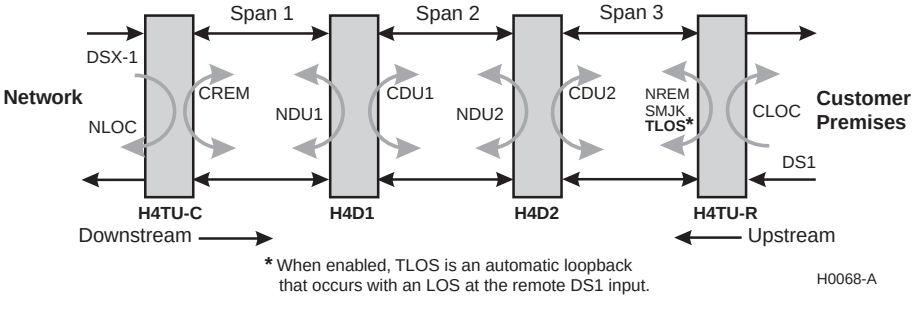
2 Press the first letter of the desired menu. Use the SPACEBAR to cycle through menu selections, and press ENTER to change a setting or display a menu.

Type the first letter	To view:
Monitor	A graphical representation of circuit activity and devices.
Performance	Performance history statistics (current, 25-hour, 48-hour, 31-day, and blockage indicator) at DS1 and HDSL4 interfaces. Also, displays alarm status and count.
Event log	Sectionalized Event History for alarms and errors at all four legs of the DS1 signal at the H4TU-R.
Config	Configuration options (standard, ADC, signal generation, date and time, master clear, factory defaults).
Inventory	Product information, circuit and unit identifications.
Rlogon	Maintenance terminal screens at the H4TU-C.
Help	Glossary, screen navigation keys, ADC contact information.
Report	Downloading status and performance monitoring data to file.

For more information about the HiGain HDSL4 maintenance screens, refer to the user manual of the H4TU-C line unit. Copies of user manuals can be downloaded from the ADC website at www.adc.com. To order a hard copy, please contact your sales representative.

4 LOOPBACK TESTING

Initiate loopbacks with the H4TU-R loopback pushbuttons, the H4TU-C front-panel display, the maintenance terminal monitor screen, or with inband codes. The inband codes shown below can be sent by a test set. For more information on loopbacks, refer to the user manual for the H4TU-C line unit.



Loopback Commands

Loopback	Inband Code	Description
NLOC	1111000	DSX-1 signal is looped back to the network at the H4TU-C.
NREM	1110000	DSX-1 signal is looped back to the network at the H4TU-R.
SMJK	11000	DSX-1 signal is looped back to the network at the H4TU-R SmartJack module.
CREM	1111110	DS1 signal from customer is looped back to the customer at the H4TU-C.
CLOC	1111100	DS1 signal from customer is looped back to the customer at the H4TU-R.
Loopdown	11100	Deactivates any of the above loopbacks.

FCC Class A Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Limited Warranty

Product warranty is determined by your service agreement. Contact your sales representative or Customer Service for details.

Modifications

Any changes or modifications made to this device that are not expressly approved by ADC DSL Systems, Inc. voids the user's warranty.

All wiring external to the products should follow the provisions of the current edition of the National Electrical Code.

Standards Compliance

This equipment has been tested and verified to comply with the applicable sections of the following safety standards:

- GR 63-CORE - Network Equipment-Building System (NEBS) Requirements
- GR 1089-CORE - Electromagnetic Compatibility and Electrical Safety
- Binational standard, UL-60950/CSA C22.2 No. 60950-00: Safety of Information Technology Equipment.

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