HiGain

QUICK INSTALLATION

H2TU-R-402 LIST 4F
REMOTE UNIT

H2TU-R-402 LIST 4F

The H2TU-R-402 List 4F functions as the remote end of a repeaterless T1 transmission system when connected to a HiGain® HDSL2 line unit (H2TU-C). Setting new standards for interoperability and efficiency, HiGain HDSL2 modules transmit 1.544 Mbps T1 payload on one unconditioned copper pair over the full Carrier Service Area (CSA) range.

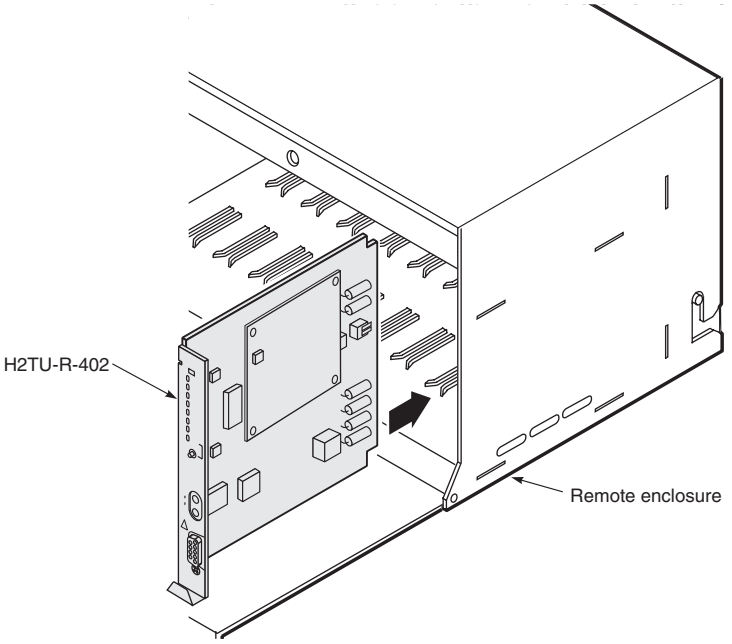
FEATURES

- Front-panel status LEDs and craft port
- Maintenance screens for inventory, provisioning, troubleshooting, and performance monitoring
- Loss of Signal/Alarm Indication Signal (LOS/AIS) payload alarm option
- Report menu option for downloading status and performance monitoring data to a file
- Ultra-low wander
- Remote provisioning through TL1 FDL or 11-bit payload commands
- Payload (PL) or HiGain (HG) loopback source identification
- Bipolar Violation Transparency (BPVT) option
- Performance Report Messaging (SPRM, NPRM, and AUTO)
- BER alarm option
- Power Back Off (PBON and PBOC) for configuring HDSL2 transmit power levels
- Dual loopback commands
- 16-bit HDSL2 status retrieval command (DBDB) through the H2TU-C
- Blockage Indicator History
- Line-powered
- Automatic Protection Switching (APS)
- DS1 Sectionalized Event Log

SPECIFICATIONS

Operating Temperature	-40°F to +149°F (-40°C to + 65°C)
Operating Humidity	5% to 95% non-condensing
Line Power Consumption	4.5 Watts
Electrical Protection	Secondary surge and power cross protection on all DS1 and HDSL2 ports
Mounting	Any 400 or 200 mechanics shelf
HDSL2 Line Rate	1.552 Mbps Overlapped Pulse Amplitude Modulated Transmission with Interlocking Spectra (OPTIS)
HDSL2 Output	+16.5 dBm ±0.5 dBm, 135Ω
DS1 Pulse Output	0 dB, -7.5 dB, -15 dB
Maximum Provisioning Loss	35 dB at 196 KHz, 135Ω
DS1 Line Rate	1.544 Mbps ±200 bps
DS1 Line Format	Alternate Mark Inversion (AMI) or Bipolar with 8-zero Substitution (B8ZS)
DS1 Frame Format	Extended SuperFrame (ESF), SuperFrame (SF), or Unframed (UNFR)

1 INSTALLATION



Wear an antistatic wrist strap when installing the H2TU-R. Avoid touching components on the circuit board.

1 Align the H2TU-R with the enclosure slot guides and slide the unit in. Push the unit back until it touches the backplane card-edge connector.

2 Place your thumbs on the H2TU-R front panel and push the unit into the card-edge connector.

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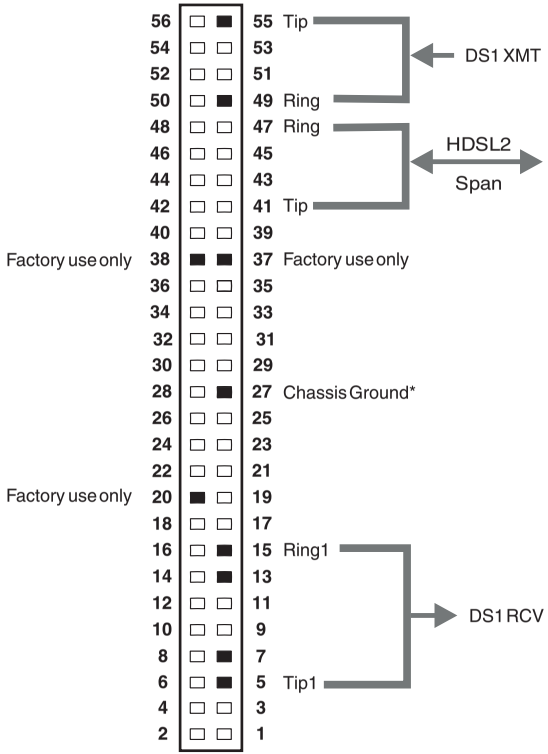
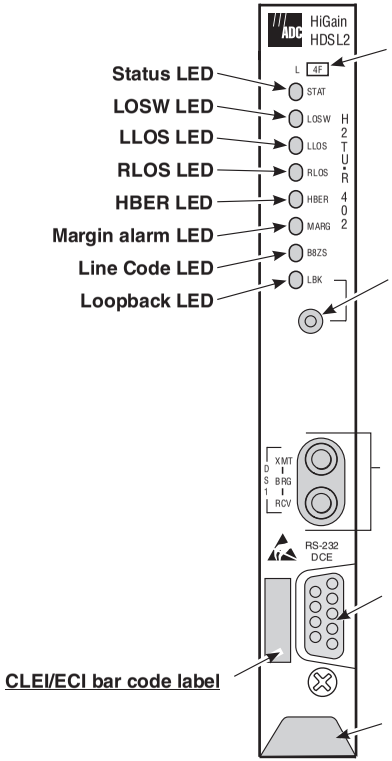
Card-edge connector



Active pins are highlighted in black.

* Chassis Ground must be tied to Earth Ground or neutral ground according to local practice.



List number

Indicates the list number of the H2TU-R-402.

Loopback control pushbutton

Press the pushbutton for 5 seconds to activate a bidirectional loopback towards the network and the customer (NREM and CLOC). Any existing loopback is terminated before these loopbacks are activated. The unit can be looped down by pressing the LPBK control pushbutton again for 5 seconds, by the standard loopdown inband messages, or by the maintenance terminal.

DS1 input (XMT) and output (RCV) bridging (BRG) jacks

Provides non-intrusive bridging jack access to (XMT) and from (RCV) the HDSL2 span at the DS1 interface. Allows testing of the HDSL2 system.

Craft port provisioning

To access all system maintenance, provisioning, and performance screens, connect a standard 9-pin terminal cable between the serial port on a PC and the H2TU-R craft port.

Extraction handle

Use to remove the H2TU-R-402 from its slot.

Maintenance Terminal Modem Settings

9600 baud
8 data bits
No parity
1 stop bit
Hardware flow control: OFF
Terminal emulation: VT100

2 VERIFICATION

Once the H2TU-R-402 is installed, verify that it is operating properly by monitoring the Status LEDs on the front panel.

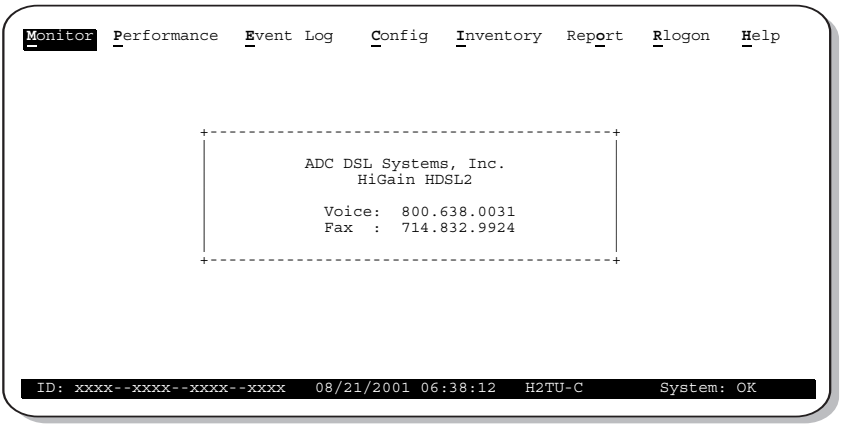
Status LED Descriptions

LED Status	Indicates
Status (STAT) LED	Shows status of power, loop acquisition, and span synchronization.
OFF	Indicates that no power is applied to the H2TU-R-402.
Solid green	Indicates normal operation: the HDSL2 span is synchronized.
Blinking once per second	Indicates that the HDSL2 loop is trying to acquire synchronization.
Loss of Sync Word (LOSW) LED	Shows synchronization status for the connected HDSL2 span.
OFF	Indicates normal operation: the connected HDSL2 span is synchronized.
Solid red	Indicates that the HDSL2 loop has lost synchronization.
Local Loss of Signal (LLOS) LED	Shows the presence of the DSX-1 signal at the H2TU-C line unit.
OFF	Indicates normal operation: the DSX-1 signal is present at the H2TU-C.
Solid red	Indicates a loss of the DSX-1 signal at the H2TU-C.
Remote Loss of Signal (RLOS) LED	Shows presence of the DS1 signal at the H2TU-R-402.
OFF	Indicates normal operation: the DS1 signal is present at the H2TU-R-402.
Solid red	Indicates a loss of the DS1 signal at the H2TU-R-402.
HDSL2 Block Error Rate (HBER) LED	Shows the status of the HDSL2 Block Error Rate (HBER) alarm for the span connected to H2TU-R-402.
OFF	The HDSL2 span is not synchronized.
Solid green	Indicates that the span connected to the H2TU-R-402 has no HBER alarm.
Solid red	Indicates that the span connected to the H2TU-R-402 has crossed the HBER alarm threshold.
Margin alarm (MARG) LED	Shows the status of the MARG alarm for the span connected to H2TU-R-402.
OFF	Indicates that the HDSL2 span is not synchronized.
Solid green	Indicates that the HDSL2 span connected to the H2TU-R-402 is synchronized.
Solid red	Indicates that the span connected to the H2TU-R-402 has crossed the MARG alarm threshold.
Line code (B8ZS) LED	Shows whether the line code option is provisioned for AMI or B8ZS.
OFF	Indicates that the system is provisioned for AMI line code.
Solid green	Indicates that the system is provisioned for B8ZS line code.
Loopback (LBK) LED	Shows the presence of an active loopback at the H2TU-R-402.
OFF	Indicates no loopback at the H2TU-R-402.
Solid yellow	Indicates there is loopback activated at the H2TU-R-402.

3 LOGGING ON TO THE MAIN MENU

The H2TU-R-402 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 H2TU-R-402 front panel.

Logging on creates menus and screens for the H2TU-R-402 that are replications of those viewed at the H2TU-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.

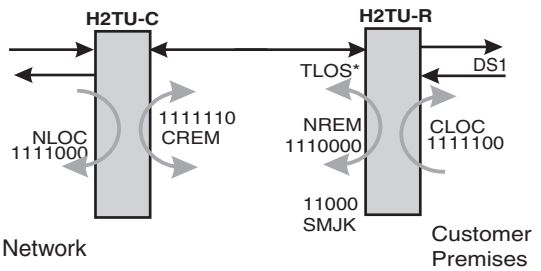
2 Press the first letter of the desired menu. Use the SPACEBAR to cycle through menu selections, and press ENTER to change a setting or display a menu.

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, blockage indicator) at DS1 and HDSL 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 H2TU-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 H2TU-C.
Help	Glossary, screen navigation keys, ADC contact information.
Report	Downloading status and performance monitoring data to file.

For more information about the HiGain HDSL2 maintenance screens, refer to the technical practice of the H2TU-C line unit. Copies of technical practices 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 H2TU-R-402 LBK button, the H2TU-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, refer to the technical practice for the H2TU-C line unit.



* When enabled, TLOS is an automatic loopback that occurs with a LOS at the remote DS1 input.

GNLB Loopback Commands

Loopback	Inband Code	Description
NLOC	1111000	DSX-1 signal is looped back to the network at the H2TU-C.
NREM	1110000	DSX-1 signal is looped back to the network at the H2TU-R.
SMJK	11000	DSX-1 signal is looped back to the network at the H2TU-R SmartJack module.
CREM	1111110	Signal from customer is looped back to the customer at the H2TU-C.
CLOC	1111100	Signal from customer is looped back to the customer at the H2TU-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.

Safety 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-1950/CSA-C22.2 No. 950-95: Safety of Information Technology Equipment

Trademark Information

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ISO 9001
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