QUICK INSTALLATION

**HIGAIN
H2TU-R-402 LIST 7F REMOTE UNIT**

ADC

THE H2TU-R-402 LIST 7F

The H2TU-R-402 List 7F (H2TU-R) functions as the remote end of a repeaterless T1 transmission system when connected to a HiGain®, Wideband System 3190, or Soneplex® HDSL2 line unit (H2TU-C). Setting new standards for interoperability and efficiency, 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, craft port, DS1 bridging jacks, and LBK pushbutton for test access

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

- Remote provisioning through TL1 FDL commands
- Loop attenuation and insertion loss reporting

- HDSL2 Tip and Ring reversal indication
- Power Back Off (PBON and PBOC) for configuring HDSL2 transmit power to reduce crosstalk
- Automatic circuit retrain to ensure quality service
- Enhanced lightning protection

SPECIFICATIONS

Operating Temperature	-40°F to +149°F (-40°C to + 65°C)
Operating Humidity	5% to 95% non-condensing
Line Power Consumption	2.7 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, -15.0 dB
DS1 Receiver Sensitivity	36 dB at 100Ω
Maximum Insertion Loss	35 dB at 196 KHz
Maximum Loop Attenuation	28 dB
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

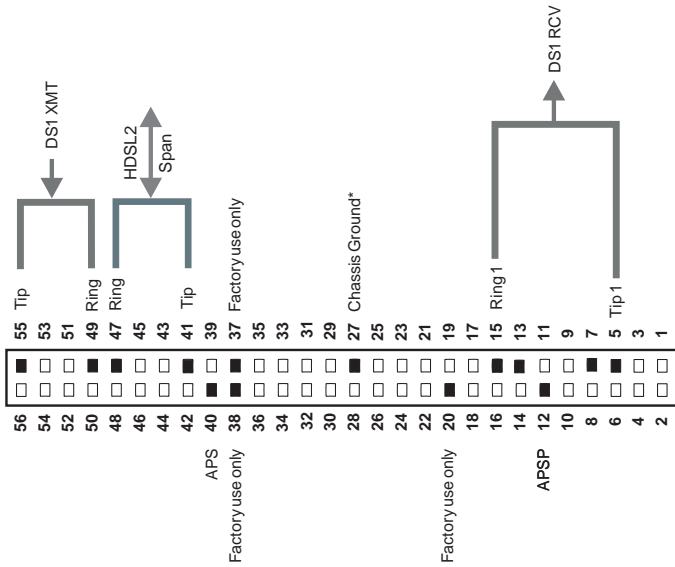Remote enclosure

H2TU-R-402

H0260-A
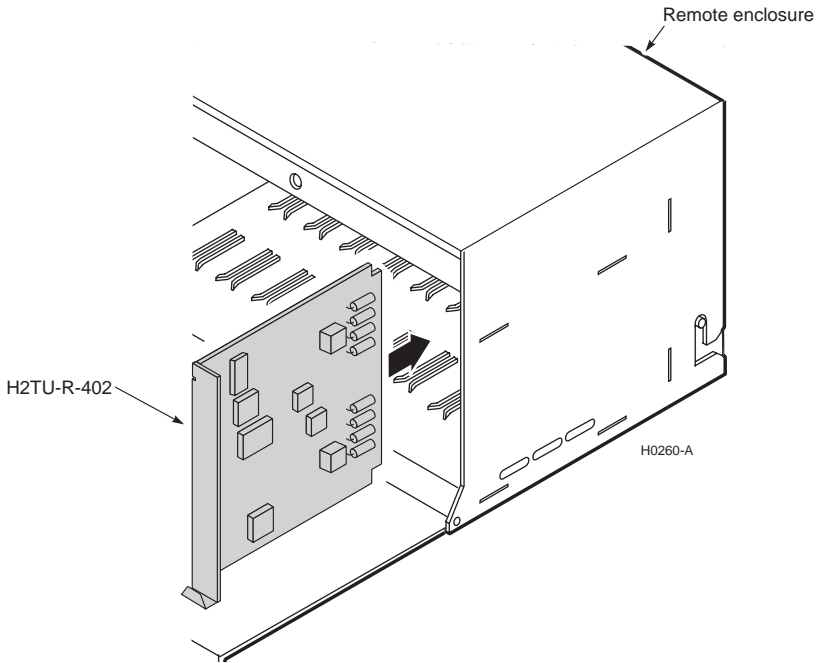
Wear an antistatic wrist strap when installing the H2TU-R. Avoid touching components on the circuit board.

1. Align the H2TU-R with the enclosure slot guides and slide the unit in 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.

Continued

Card-Edge Connector

List number

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

Loopback control pushbutton

Press the pushbutton for 5 seconds to activate a dual 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 or loopdown inband messages sent through the maintenance terminal.

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

Provides non-intrusive bridging jack access to the DS1 signal received by (RCV) and transmitted from (XMT) the Customer Premises Equipment (CPE). 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.

CLEI/ECI bar code label

Status LED
LOSW LED
LLOS LED
RLOS LED
HBER LED
Margin alarm LED
Line code LED
Loopback LED

ADC HiGain HDSL2

STAT LOSW LLOS RLOS HBER MARG BRZS LBK

XMT
D BRG
S
RCV

RS-232 DCE

H0263-B

DS1 XMT
HDSL2 Span
DS1 RCV

56 55 Tip
54 53
52 51
50 49 Ring
48 47 Ring
46 45
44 43
42 41 Tip
40 39
APS 38 37 Factory use only
36 35
34 33
32 31
30 29
28 27 Chassis Ground*
26 25
24 23
22 21
Factory use only 20 19
18 17
16 15 Ring 1
14 13
APSP 12 11
10 9
8 7
6 5 Tip 1
4 3
2 1

Factory use only

Active pins are highlighted in black.

* Chassis Ground may be tied to Earth Ground according to local practice.
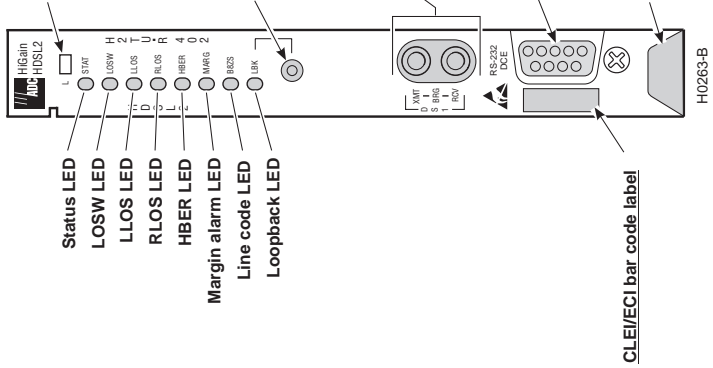
2 VERIFICATION

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

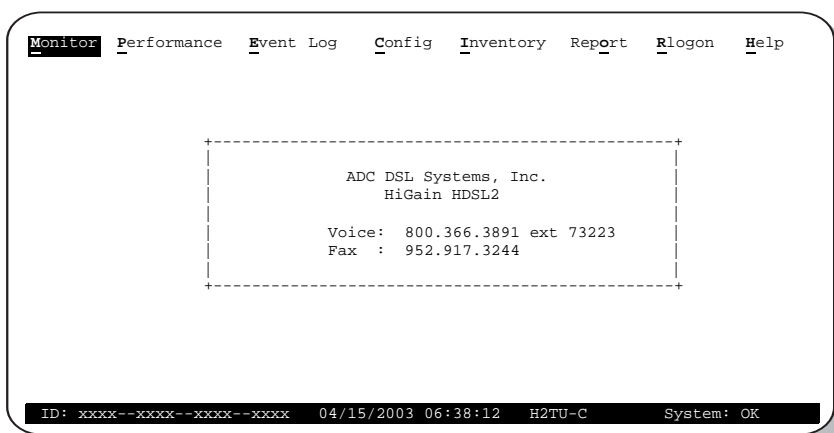*Table 1. Status LED Descriptions*

LED and Status	Function
STAT	
OFF	No power is applied to the H2TU-R.
Solid green	Normal operation: the HDSL2 span is synchronized.
Flashing green once per second	HDSL2 loop synchronization attempt.
LOSW	
OFF	Normal operation: connected HDSL2 span is synchronized.
Solid red	HDSL2 loop has lost synchronization.
LLOS	
OFF	Normal operation: DSX-1 signal present at the H2TU-C.
Solid red	DSX-1 signal has lost synchronization.
RLOS	
OFF	Normal operation: DS1 signal present at the H2TU-R.
Solid red	DS1 signal has lost synchronization.
HBER	
OFF	HDSL2 span is not synchronized.
Solid green	HDSL2 span connected to the H2TU-R has no HBER alarm.
Solid red	HDSL2 span connected to the H2TU-R has crossed the HBER threshold.
MARG	
OFF	HDSL2 span is not synchronized.
Solid green	HDSL2 span connected to the H2TU-R is synchronized without MARG alarm.
Solid red	HDSL2 span connected to the H2TU-R has crossed the MARG threshold.
B8ZS	
OFF	System provisioned for AMI.
Solid green	System provisioned for B8ZS.
LBK	
Solid yellow	Loopback activated at the H2TU-R

3 LOGGING ON TO THE MAIN MENU

The H2TU-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 H2TU-R front panel.

Logging on creates menus and screens for the H2TU-R 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.

```
 Monitor   Performance   Event Log    Config   Inventory   Report    Rlogon    Help


                  +------------------------------------------------+
                  |                                                |
                  |            ADC DSL Systems, Inc.               |
                  |               HiGain HDSL2                     |
                  |                                                |
                  |         Voice:  800.366.3891 ext 73223         |
                  |         Fax  :  952.917.3244                   |
                  |                                                |
                  +------------------------------------------------+



 ID: xxxx--xxxx--xxxx--xxxx   04/15/2003 06:38:12   H2TU-C       System: OK
```

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 `SPACEBAR` to cycle through menu selections, then press `ENTER` to change a setting or to display a menu.

Type the first letter	To view:
M onitor	A graphical representation of circuit activity and devices.
P erformance	Performance history statistics (current, 25-hour, 48-hour, 31-day, and blockage indicator) at DS1 and HDSL/HDSL2 interfaces. Also, displays alarm status and count.
E vent log	Sectionalized Event History for alarms and errors at all four legs of the DS1 signal at the H2TU-R.
C onfig	Configuration options (standard, ADC, signal generation, date and time, master clear, factory defaults).
I nventory	Product information, circuit and unit identifications.
R logon	Maintenance terminal screens at the H2TU-C.
H elp	Glossary, screen navigation keys, ADC contact information.
Rep **O** rt	Downloading status and performance monitoring data to file.

> **For more information about the HDSL2 line unit maintenance screens, refer to the H2TU-C line unit user manual. Copies of ADC line unit 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 loopback testing from the maintenance menus, H2TU-R front-panel pushbutton, H2TU-C front-panel pushbuttons, or with inband codes sent by a test set (see table below). For more information about loopback testing, refer to the H2TU-C line unit user manual.
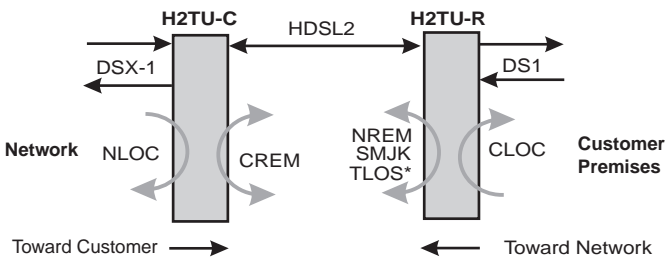
* When enabled, TLOS is an automatic loopback that occurs with an LOS at the remote DS1 input.

H0025-B

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	DS1 signal from customer is looped back to the customer at the H2TU-C.
CLOC	1111100	DS1 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.

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 Third Edition: Safety of Information Technology Equipment.

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