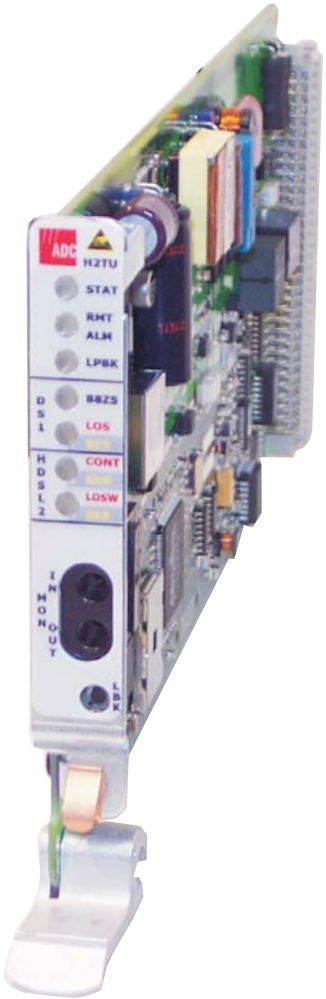
QUICK INSTALLATION



LPS-H2C-L7A LINE UNIT

THE LPS-H2C-L7A

The LPS-H2C-L7A is a low-power, HDSL2 plug-in line card that installs in a LoopStar™ Chassis, Soneplex® Loop Extender Chassis (LEC), Soneplex Broadband Chassis (BBC), or Soneplex Integrated Broadband Chassis (IBBC). To ensure proper operation, the LPS-H2C-L7A line unit requires the H2TU-R-402-L7A as the corresponding remote unit. The system provides 1.544 Mbps full-duplex transmission on one unconditioned copper pair over the full Carrier Service Area (CSA) range. The CSA includes loops of up to 12,000 feet on 24 AWG wire or 9,000 feet on 26 AWG wire, including bridged taps.

FEATURES

- 1.544 Mbps full-duplex transmission on one unconditioned copper pair
- AMI or B8ZS line code detection
- Status Light Emitting Diodes (LEDs) for Digital Signal Level 1 (DS1) and HDSL2
- Provides -190 Vdc line power
- Ground fault detection
- Supported by Shelf Controller Unit (SCU) software version 3.6.2 or later
- Dual loopbacks
- Lightning and power cross-protection on HDSL2 interfaces
- AUTO, UNFR, SF, or ESF frame format
- Ultra-low wander (0.26 UI)

SPECIFICATIONS

Operating Temperature	-40°F to +149°F (-40°C to + 65°C)
Operating Humidity	5% to 95% non-condensing
Input Voltage	-48 Vdc nominal (-40 to 57.5 Vdc)
Power Consumption	7.8 Watts
Line Power Output	-190 ±8 Vdc
Electrical Protection	Secondary surge and power cross-protection on all HDSL2 ports
Mounting	LoopStar, Soneplex Loop Extender, Soneplex Broadband Chassis, or Soneplex Integrated Broadband Chassis
HDSL2 Line Code	16 level PAM (OPTIS)
HDSL2 Output	+16 dBm ±0.5 dBm, 135Ω
HDSL2 Maximum Insertion Loss	35 dB @ 196 kHz
DS1 Equalization	0 to 655 feet in 133 foot increments
DS1 Line Rate	1.544 Mbps ±200 bps
DS1 Line Format	Alternate Mark Inversion (AMI) or Bipolar 8-Zero Substitution (B8ZS)
DS1 Frame Format	Extended SuperFrame (ESF), SuperFrame (SF), UNFR, or AUTO (detects and adapts current frame format)

1 INSTALLATION

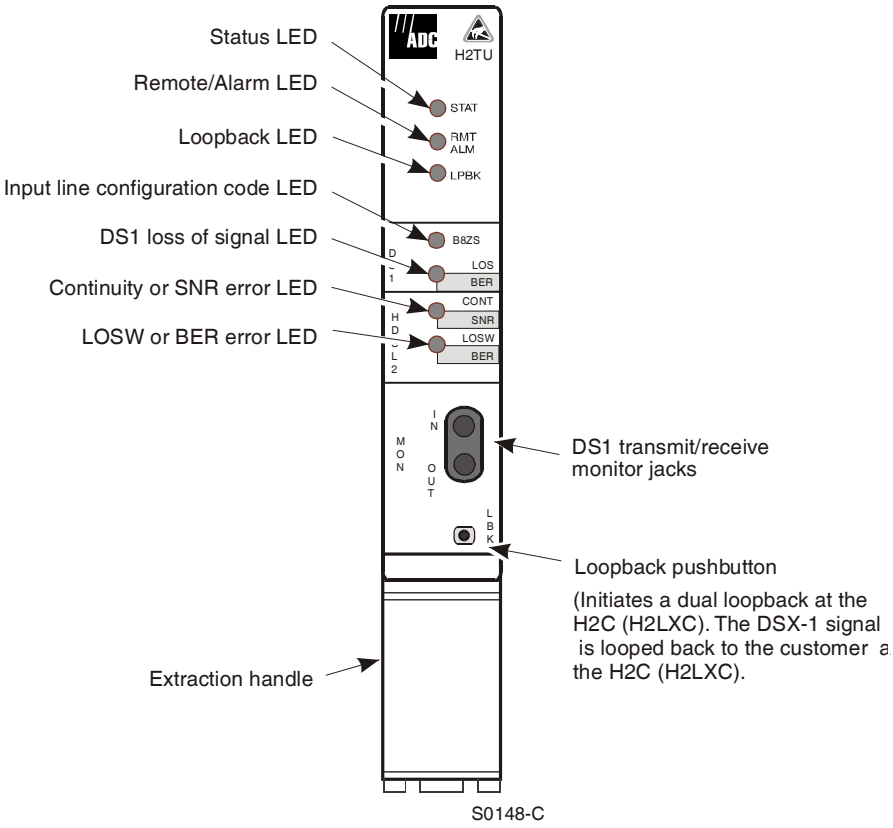
1. Align the line card with the enclosure slot guides and slide the card in until it touches the backplane connector.
2. Raise the extraction lever at the bottom of the front panel to press the card into the backplane connector.

2 POWER-UP SEQUENCE

When the line card powers up, the following occurs:

1. The STAT LED briefly turns red then yellow, indicating that the power is on and self-test is beginning. The remaining LEDs momentarily turn yellow, then turn off.
2. The front-panel LEDs appear as follows upon successful completion of self-test (refer to Table 1):
   - STAT— Displays green
   - RMT ALM—Off
   - LPBK—Off
   - DS1 LOS/BER—Off, red, or yellow (see Table 1 for detailed information).
   - HDSL2 CONT/SNR—Initially displays red, then Off.
   - HDSL2 LOSW/BER—Initially displays red, then displays flashing green until loops are synchronized.

Continued



3 VERIFICATION

Once the LPS-H2C (hereafter referred to as the H2C) is installed, verify that it is operating properly by monitoring the Status LEDs on the front panel (see Table 1).

Table 1. *Status LED Descriptions*

LED	Description
Status (STAT)	Displays results of self-test.
Red	Internal fault detected during self-test.
Yellow	Card is initializing or performing self-test.
Green	Normal operation.
Off	No power to the CO line card or blown fuse.
RMT ALM	Indicates detection of remote alarm.
Yellow	Remote alarm detected at the H2TU-R.
Off	Normal operation.
LPBK	Indicates loopback activity at H2C (H2LXC).
Yellow	**Flashing:** 1 flash per second when armed in intelligent loopback modes. **Steady:** Active DS1 loopback at any unit in the system.
Off	Normal operation.
DS1 B8ZS	Indicates input line code configuration.
Green	Input code is provisioned for B8ZS.
Off	Input code is provisioned for AMI.
DS1 LOS/BER	Indicates loss of DS1 input signal (LOS), Bipolar Violation (BPV), or Bit Error Rate (BER) errors at DS1 interface.
Red	LOS (DS1 receive signal is lost).
Yellow	**Brief Flash:** Intermittent BPV errors. **Steady:** BER threshold exceeded at local DS1 interface (default is 10^{-7})
Off	Normal operation.
HDSL2 CONT/SNR	Indicates loss of loop continuity or signal-to-noise ratio (SNR) errors.
Red	The HDSL2 loop has lost continuity.
Yellow	SNR exceeded threshold value at near end of local loop (default is +5 dB).
Off	Normal operation.
HDSL2 LOSW/BER	Indicates loss of HDSL2 frame synchronization (LOSW), Cyclical Redundancy Check (CRC), or BER errors.
Red	HDSL2 LOSW detected.
Yellow	**Brief Flash:** HDSL2 CRC error detected. **Steady:** BER threshold exceeded on HDSL2 loop, (default is 10^{-7}).
Flashing Green	HDSL2 activation in progress.
Green	Normal operation.

4 LOGGING ON TO THE MAIN MENU

The LPS-H2C-L7A supports system logon through a maintenance terminal (VT100 or a PC running VT100 terminal-emulation software) connected to the craft port on the SCU front panel. Once logged on, you can access the Main Menu screens to view local and remote system settings, initiate loopbacks, and provision the circuit.

To log on and access the Main Menu screens using a maintenance terminal:

1 Press the ENTER key once to display the Logon screen.

2 Type the assigned logon ID in the **Enter User Name** field. If you are using SCU v3.6.2 through v4.1, type SONEPLEX. If you are using SCU v5.0, type LOOPSTAR. Press ENTER.

3 Type the assigned password at the **Enter Password** field. If you are using SCU v3.6.2 through v4.1, type SONEPLEX1. If you are using SCU v5.0, type LOOPSTAR1.

4 Press the ENTER key to view the Main Menu screen.

When logging onto the H2TU-R-402-L7A craft port, the LPS-H2C may be labeled as H2C or H2LXC, depending on the system resident at the CO.

5 LOOPBACK TESTING

Initiate loopback testing from the maintenance terminal menus or by using inband codes. The inband codes shown in Table 2 can be sent by a test set. For more detailed information on loopbacks, refer to the user manuals listed in the note below.

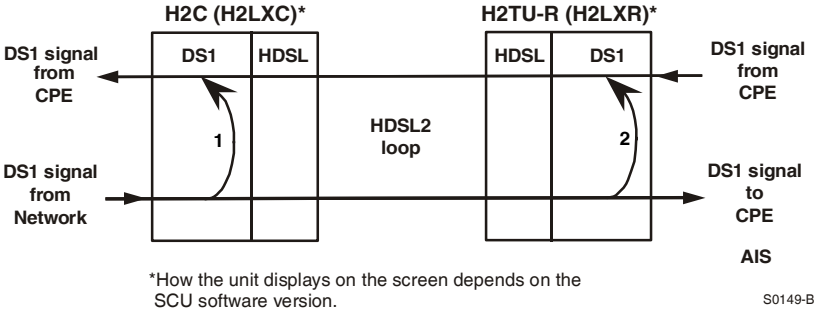


Table 2. *Default Codes for Network Programmable Loopback Operations*

Operation	Default Binary Code	Description
Loopup H2C/H2LXC (1)	1101 0011 1101 0011	The signal is sent inband, activating a loopback at the given unit. Unit goes from Armed to Loopup state.
Loopup H2TU-R/H2LXR (2)	1100 0111 0101 0100	
Loopdown (all units)	1001 0011 1001 0011	The signal is sent inband, deactivating the loopback. Unit goes from Loopup state to Armed state.
Loopup timeout disable	1101 0101 1101 0110	Disables loopup time-out. Loopback stays active until deactivation or disarm code is received.

The Shelf Controller Unit (SCU) determines the screens viewed from the user interface. SCU v3.6.2 through v4.1 support the LPS-H2C-L7A in BBC, IBBC, and LEC systems. The LoopStar system uses SCU v5.x firmware.

For more detailed information, refer to the following manuals which can be downloaded from the ADC web site at *www.adc.com*:

- **LoopStar Chassis Installation Manual (LTPS-UM-8048)**
- **LoopStar Shelf Controller Unit v5.0 User Manual (LTPS-UM-8060)**
- **LPS-H2C-L7A Line Unit User Manual (LTPS-UM-8070)**

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 Telecommunications, 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 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.

Trademark Information

ADC and Soneplex are registered trademarks of ADC Telecommunications, Inc. Other product names mentioned in this installation guide are used for identification purposes only and may be trademarks or registered trademarks of their respective companies.

Copyright Information

World Headquarters

ADC Telecommunications, Inc.
PO Box 1101
Minneapolis, MN 55440-1101
USA

Technical Assistance

Tel: 800.366.3891, x73223
Tel: 952.917.3223
Fax: 952.917.3244
Email: wsd.support@adc.com

Product Catalog: LPS-H2C-L7A
CLEI: SOC3FGSD
Document: LTPS-QI-8067-02

1287473
March 15, 2004