

HiGain® HDSL

Fast, Economical, Reliable, and Manageable T1 Deployment



Line Units

Doubler Units

Remote Unit

ADC's HiGain® HDSL systems are used by telco providers worldwide to quickly, economically, and reliably turn up high-speed data, voice and video services. HiGain HDSL provides transport of T1 service over two unconditioned copper pairs at distances up to 12,000 ft/3.6 km on 24 AWG (0.5 mm) or 9,000 ft/2.7 km on 26 AWG (0.4 mm) per span (up to 5).

HiGain provides extensive diagnostics, including a 4-character real-time display. Because they are available in a variety of mechanics (3192, 220, DDM+, LiteSpan, or 200/400) HiGain Line Units (HLU) can be installed in existing managed or unmanaged CO shelves. When ADC HiGain managed shelves (HMS) or HiGain Retrofit Managed Shelves (HRMS) are used, all configuration and performance monitoring can be remotely performed by the Network Operations Center (NOC).

HiGain Doubler Units (HDUs) allow HiGain systems to be used for applications outside the Carrier Service Area (CSA), increasing the range by up to five times up to 60 Kft/18 Km on 24 AWG (0.5 mm) or 45 Kft/13.5 Km on 26 AWG (0.4mm). Span equipment consists of HDUs that can be deployed in the existing repeater enclosures or in remote enclosures for higher deployment density and lower deployment costs. Outdoor enclosures from ADC are available for both above and below ground installations.

ADC's HiGain Remote Units (HRUs) are designed to install both indoors and outdoors in a variety of remote enclosures, or on existing remote mountings on or near customer premises. They operate as slaves to the HLU and incorporate loopback functions and LED indications for simple installation and maintenance. The HRUs provide the industry-standard ANSI T1.403 interface toward the customer.

SPEC SHEET



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Features

- Up to 5-span reach [60 kft/18 km on 24 AWG (0.5mm) or 45 kft/13.5 km on 26 AWG (0.4mm) see figures 1 and 2]
- Lowest power consumption and heat dissipation
- Low voltage (<140 VDC) powering of up to two spans (one doubler)
- Safest line powering (Class A2 or Class A3)
- Ultra-low system delay
- BPV transparency for copper-fed DLC support
- Stratum 1 clock capable
- Full compatibility with the installed base of HiGain systems
- Variety of industry-standard mechanics
- Front-panel craft ports, DSX-1 test access and status display and provisioning
- Comprehensive OAM&P data
- NEBS Level 3 and UL/CSA compliance

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Ordering Information

Description	Catalog Number
Central office line unit, "3192" mechanics	HLU-319 L5
Central office line unit, "220" mechanics	HLU-231 L8
Central office line unit, "DDM+" mechanics	HLU-388 L5
Line unit for LiteSpan 2000, craft port managed, display, option buttons, test access jacks	HLU-200 L3A
Central office line unit, 200/400 mechanics	HLU-432 L1
Central office line unit, 200/400 mechanics with DS1 and HDSL lines reversed	HLU-432 L2
Micro doubler, "239" mechanics, single-slot	HDU-409 L2A
Micro doubler, "200" mechanics	HDU-404 L2
Line/local powered, "200" mechanics	HRU-402 L1

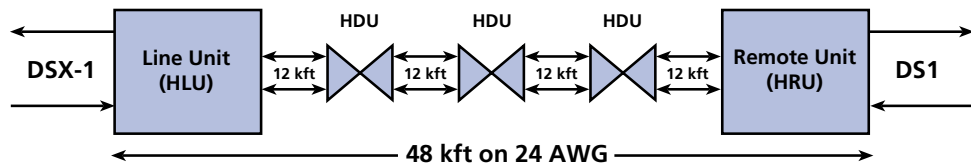


Figure 1: Up to 4-Span Extended Reach with all doublers and remotes line powered

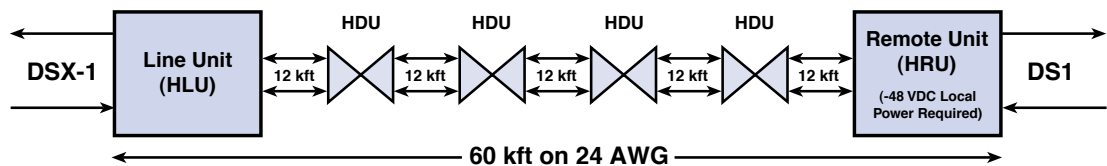


Figure 2: 5-Span Extended Reach with doublers line powered and remote locally powered



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Specifications

HDSL TRANSMISSION

Line Code:	784 kbps 2B1Q
Transmission:	dual-duplex
Media:	two non-loaded two-wire metallic cable pairs
Output Signal:	+13.5 dBm ±0.5 dB into 135Ω
Maximum Provisioning Loss:	35 dB @ 196 kHz, 135Ω

DSX-1 INTERFACE (CO SIDE)

Output Level:	6 Vpk-pk, pre-equalized for 0 - 655 ft of ABAM cable
Input Level:	+1.5 to -7.5 db DSX
Impedance:	100Ω
Line Rate:	1.544 Mbps ±200 bps
Line Format:	AMI, B8ZS or ZBTISI
Frame Format:	ESF, SF and unframed

DS1 INTERFACE (REMOTE SIDE)

Output Level:	6 to -7.5 Vpk-pk
Input Level Sensitivity:	> -22.5 dB
Line Rate:	1.544 Mbps ±200 bps
Line Format:	AMI, B8ZS or ZBTISI
Frame Format:	ESF, SF and unframed
Output Level:	0, -15 dB (selectable)

SYSTEM

One-way DS1 Delay:	<200 μs (HLU and HRU) + <80 μs (HDU)
Wander (looped):	0.3 UI max (1 UI = 648 ns)
Wideband Jitter (looped):	0.2 UI max
Narrowband Jitter (looped):	0.1 UI max

REACH

Each Span:	CSA design rules, e.g. 9 kft on 26 AWG or 12 kft on 24 AWG, no load coils, bridged taps per CSA guidelines
Number of Spans:	5 total, 4 line powered

DSX-1 TEST ACCESS (CO SIDE)

"210" Bantam jacks:	bridging, splitting/line, splitting/drop
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DS1 TEST ACCESS (REMOTE SIDE)

"210" Bantam Jacks:	bridging (monitor and test)
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ALARMS

Fuse Open:	LLOS, RLOS, LOSW, BER, margin, power feed short or ground
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LOOPBACKS

Direction:	NI, CI
Inband:	generic HiGain, intelligent repeater, T1 standard
HiGain:	activated from craft port (HLU and HRU), system options buttons (HLU), or loopback button (HRU)

USER INTERFACES (CO SIDE)

Craft Port:	RS-232 (DCE)
Front Panel:	four-character display, status LED, system options buttons

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Specifications (Cont'd)

USER INTERFACES (REMOTE SIDE)

Craft Port: RS-232 (DCE)
Front Panel: status LEDs

PROVISIONABLE OPTIONS

Equalization, SmartJack and special loopbacks, power feed mode, T1 frame format, BER alarm threshold, loopback timeout, alarm disable, DSX-1 line code, AIS on 1LP, AIS on SmartJack NREM, DSO blocking, RLOS alarm enable, alarm pattern, BPV Transparency

LINE POWERING

Modes: Low, auto, high, disable
Line Voltage: ≤ 140 VDC or ± 112 VDC

POWER

CO Supply: -48 VDC (nom.) (-42.5 VDC to -56.5 VDC)

ENVIRONMENTAL (OPERATING)

Humidity: 5% to 95% (non-condensing)
Temperature: -40°F to +149°F (-40°C to +65°C)
NEBS Compliance NEBS Level 3 Class A2 or A3 per GR-1089-CORE depending on the operation mode Applicable Sections: GR-63-CORE, GR-499-CORE, GR-1089-CORE, SR-3580
Regulatory Compliance UL 1459, CSA, FCC Rules Part 15 Class A

SPEC SHEET



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