



HDSL4 Line Module

Total Access® 5000 HDSL4 8-port Line Module

Although the emergence of next-generation services is driving fiber deployment deeper into the network, there are still many areas where the deployment of fiber is impractical. The Total Access 5000 HDSL4 Line Module provides a copper transport alternative for the Total Access 5000 Multiservice Access and Aggregation Platform or can provide a customer interface in conjunction with ADTRAN's NetVanta® 800 Series of NTU. The HDSL4 Line Module allows carriers to deploy a more cost-effective IP/Ethernet core product in the network, leveraging existing copper transport facilities until fiber can be economically deployed to that location.

An HDSL4 Line Module in a Total Access 5000 Network Application: Traditional copper-fed Remote Terminals (RTs) have required separate TDM T1 circuits for voice transport and ATM T1 circuits for data transport. The Total Access 5000 HDSL4 Line Module leverages IEEE 802.3ah Ethernet in the First Mile (EFM) to bond T1s (transported by HDSL4) together to create a converged Ethernet over copper transport infrastructure that carries both data and voice traffic.

HDSL4 Line Module in an Ethernet over Copper or Ethernet over TDM Environment: Traditional T1 circuits are TDM in nature and are transported over copper using several methods, HDSL4 being one of those. In this case, a T1 was typically brought out of an M13 Multiplexer and into an ORB where HDSL4 was added to transport the T1 over some distance until it arrived at an HDSL4 Remote unit which provided the T1 to a NTU which separated DS0s for voice and data. With HDSL4 EFM, HDSL4 is delivered directly out of the Total Access 5000 and terminated directly into the NetVanta 800 Series NTU which provides the customer direct Ethernet Access to the network.

For both environments: EFM bonding allows T1s to be dynamically added or subtracted (due to unlikely span failures), providing redundancy with sub 50 ms failover times to support critical traffic. Additionally, HDSL4

Line Modules can be deployed in adjacent slots and configured to provide resiliency to a bonded circuit by protecting hardware to keep EFM groups up, even in the unlikely event of a hardware failure.

Bandwidth across the EFM links is managed dynamically and prioritized via 802.1p and 802.1Q, providing Class of Service prioritization for voice traffic over data traffic. Additionally, since calls are dynamically set up in the Total Access 5000 only when the line is active, lower priority data traffic can leverage previously unused POTS bandwidth, allowing carriers to offer higher bandwidth and higher revenue services even in copper fed locations.

Eight HDSL4 interfaces are available on each HDSL4 Line Module and each interface can be configured to support line powering for repeaters. EFM bonding allows adjacent HDSL4 Line Modules to be bonded together, providing a maximum EFM group of 16 T1s or 24 Mbps of Ethernet transport bandwidth over copper.

As an added feature, the HDSL4 Line Module may be provisioned to operate in a Psuedowire mode which allows for circuit emulation of a T1 over Ethernet transport. Psuedowire or PWE3, is used on next generation networks to efficiently backhaul TDM T1s that are required for older systems or contracted services without the additional expense of separate data transport.

Front panel LEDs include power, card status, and loop status for each network uplink. The HDSL4 Line Module supports craft interface management via the Total Access 5000 System Controller Module (SCM). More comprehensive management is available using the Total Access Element Management System (EMS).

All provisioning is supported through the SCM communications link. All provisioning data is stored in nonvolatile memory for recovery after a power loss and optional auto-provisioning is supported via the SCM.

Product Features

- Provides eight HDSL4 interfaces
- Up to 160 HDSL4 circuits per Total Access 5000
- Ethernet in the First Mile (IEEE 802.3ah) bonding
- PWE3 (Psuedowire) support
- Bonding of up to 16 HDSL4 circuits for total 24 Mbps of Ethernet transport capacity over copper
- Supported by Total Access EMS
- Industry-leading 10-year warranty



Smart Solutions for a
Connected World.



ADTRAN, Inc.
901 Explorer Boulevard
Huntsville, AL 35806

P.O. Box 14000
Huntsville, AL 35814-4000

256 963 8000 voice
256 963 8030 fax

General Information
800 9ADTRAN
info@adtran.com
www.adtran.com

**Pre-Sales
Technical Support**
888 5ADTRAN
support@adtran.com
www.adtran.com/support

Where to Buy
800 827 0807
www.adtran.com/where2buy

**Post-Sales
Technical Support**
800 726 8663
support@adtran.com
www.adtran.com/support

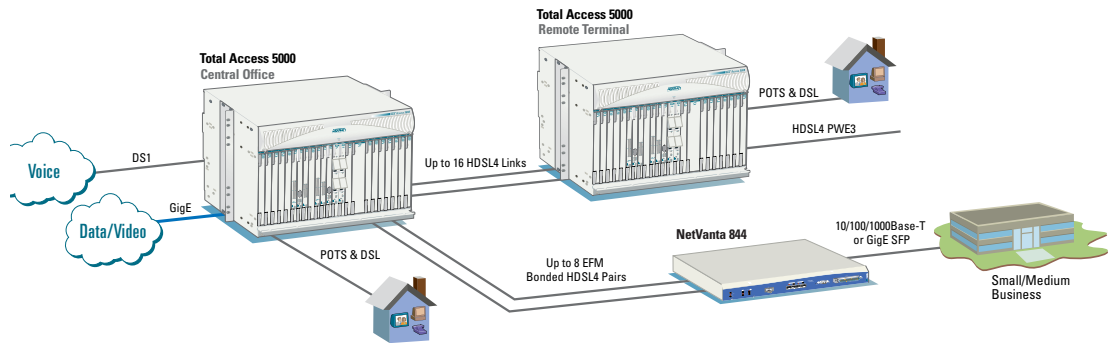
Regional Offices
Dallas, TX
972 830 9070
Denver, CO
303 471 9150
Kansas City, KS
800 471 8649
Newark, NJ
800 471 8656
Ontario, Canada
416 290 0585
Quebec, Canada
877 923 8726
San Antonio, TX
888 223 7671

International Inquiries
+1 256 963 8716 voice
+1 256 963 6300 fax
international@adtran.com
www.adtran.com/international



ADTRAN is an ISO 9001, ISO 14001, and a TL 9000 certified supplier.

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Product Specifications

Mechanical

Dimensions

- Height: 9.25 inches
- Width: 0.8 inches
- Depth: 9.25 inches

Interfaces

Modes

- HDSL4
- EFM (Network Mode)
- EFM (Edge Mode)
- PWE3 (Pseudowire)

Physical

- Requires LMIO2 CH50 DIVIDED
- Female CH50 connector for line termination

Framing

- ESF

Line Powering

- -180 VDC nominal to ground
- Up to 3 repeaters on a circuit
- 135mA

Regulatory Standards

- NEBS Level 3
- GR-1089 CORE
- GR-63 CORE
- NRTL Listed
- FCC Part 15

Management

- Remote management through SNMP and TL1
- Ethernet interface for SNMP environmental

Environment

- Operating Temperature: -40°C to +65°C
- Storage Temperature: -40°C to +70°C
- Relative Humidity: Up to 95%, noncondensing

Ordering Information

Equipment	Part #
Total Access 5000 HDSL4 8-Port Line Module	1187310L1
Total Access 5000 LMIO2 CH50 Divided	1187401L1