Carriers are deploying a variety of access platforms that deliver multiple services. Many T1 line deployments have been converted to HDSLx technology. In situations where pairs are in short supply, lines have been converted to HDSL2 to save copper pairs. ADTRAN® offers end-to-end HDSL2 card solutions with the Total Access® 3000 Multiservice Platform.

Total Access 3000 is an intelligent, open-architecture, carrier class multiservice access platform for deploying Hi-Cap and DSL services. Total Access 3000 offers unprecedented flexibility, along with multiple service options and management capabilities. Its real value in a TDM configuration is its ability to deliver T1 lines out to various applications. This compact, modular device is a single platform for delivering manageable, profitable services now and into the future. It supports HDSL, HDSL2, HDSL4, DSX-1, and POTS applications in conjunction with IADs and other network components.

HDSL2 became the next generation of DSL technology for the local loop. Standardization and interoperability were recognized as necessities for any future transmission mode. ADTRAN led the industry development of HDSL2 as a response to carrier needs and the physical demands being placed on copper networks.

The goal of HDSL2 was to transport T1 traffic on a single-pair of copper using CSA design guidelines. By basing deployment on CSA guidelines, the embedded base of copper facilities and the deployment guidelines used for yesterday’s 4-wire HDSL can be used for HDSL2 circuits.

To be a fit for today’s copper plant, HDSL2 is compatible with other technologies in the network. Using spectral-shaping techniques, HDSL2 is designed to be compatible with other loop technologies such as ISDN, T1, HDSL and ADSL.

Interoperability between HDSL2 vendors and products accelerated the acceptance of HDSL2 by the service providers. Interoperability also allows for ubiquitous service for T1 transport.

In HDSL2, the entire DS1 payload is carried over a single copper pair. The DS1 payload plus HDSL2 overhead results in 1.552 Mbps transported over the pair.

ADTRAN’s HDSL2 central office and remote units are equipped with troubleshooting-at-a-glance LEDs that provide customers with a simple means of identifying the location of certain faults. Several new screens have been added to the craft interface to simplify the trouble isolation process.

These units are equipped to support the ADTRAN TScan™ feature. TScan allows the remote retrieval of circuit diagnostics and performs advanced fault location. For implementation of TScan, please contact your local ADTRAN sales representative.
HDSL2 for Total Access 3000

H2TU-C for Total Access 3000 Form Factor

Product Specifications

Technical Specifications
- **Modulation type:** 16 TC PAM
- **Mode:** Full duplex, partially overlapped echo canceling
- **Number of pairs:** 1
- **Line rate:** 1.552 Mbps
- **Baud rate:** 517.333 kbaud
- **Loop loss:** 35 dB maximum at 196 kHz
- **Bridged taps:** Single taps less than 2000 ft, total taps less than 2500 ft
- **Performance:** Compliant with T1.418-2000 (HDSL2 Standard, Issue 2)
- **H2TU-C transmit power (data) level:** 16.8 ±0.5 dBm (0 to 450 kHz)
- **H2TU-C transmit power (activation) level:** 16.6 ±0.5 dBm (0 to 450 kHz)
- **Input impedance:** 135 ohms
- **Maximum loop resistance:** 900 ohms (nonrepeatered circuit)
- **Return loss:** 12 dB (50 kHz to 200 kHz)

Interfaces
- **Network:** DS3, OC-3
- **Subscriber:** HDSL2

Electrical
- **H2TU-C total power:** -48 VDC at 160 mA with H2TU-R,
- **Span power:** -190 VDC (internally generated)
  - Class A2 compliant, GFI current at less than 5 mA, loop current limited at 150 mA
- **Fusing:** 1.00 A (not field replaceable)

Regulatory Standards
- **NEBS Level 3**
- **GR-1089-CORE, Issue 3**
- **GR-63-CORE, Issue 2**
- **NRTL Safety Listed**

Clock
- **Clock sources:** Internal, DSX-1 derived (with HDSL2 frame bit stuffing)
- **Internal clock accuracy:** ±25 ppm (exceeds Stratum 4), meets T1.101 timing requirements

Environmental
- **Operating temperature:** -40°C to +70°C
- **Storage temperature:** -40°C to +85°C

Ordering Information

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Office Form Factors</td>
<td>1181113L2</td>
</tr>
<tr>
<td>Repeaters</td>
<td></td>
</tr>
<tr>
<td>H2R 239</td>
<td>1221045L1</td>
</tr>
<tr>
<td>H2R 239 PSD</td>
<td>1221045L2</td>
</tr>
<tr>
<td>Remote Units</td>
<td></td>
</tr>
<tr>
<td>T200 Local Power H2TU-R</td>
<td>1223024L2</td>
</tr>
<tr>
<td>T200 Span Power H2TU-R</td>
<td>1223026L2</td>
</tr>
</tbody>
</table>

Specifications are subject to change without notice. TScan is a trademark and ADTRAN and Total Access are registered trademarks of ADTRAN, Inc. All other registered trademarks and trademarks mentioned in this publication are the property of their respective owners.