Total Access 1000 Data Access Terminal
Installation and Maintenance

CONTENTS
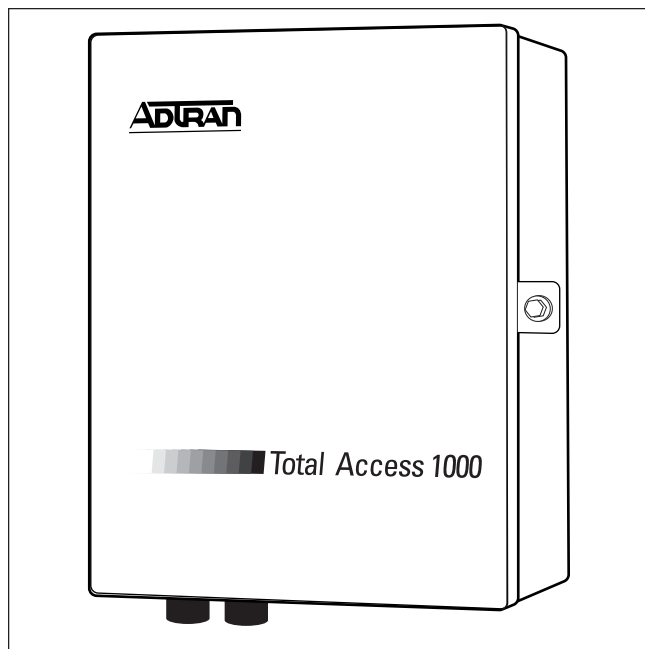
FIGURES

TABLES

Figure 1. Total Access 1000 DAT

1.   GENERAL

This practice provides installation and maintenance procedures for the ADTRAN Total Access 1000 Data Access Terminal (DAT). **Figure 1** is an illustration of the Total Access 1000 DAT enclosure. Refer to *Appendix A* for the quick start guide for ADSL plus POTS.

Revision History

This is the initial release of this document. Changes in future revisions will be noted in this subsection.

Description

The Total Access 1000 DAT is a high performance remote DSLAM system for deploying DSL and voice services. A small and versatile platform, the Total Access 1000 DAT uses span powering along with IMA signaling to deliver 12 ADSL plus POTS loops from two, three, or four HDSL2 spans. This design provides carriers the flexibility needed to meet customer service commitments.

The Total Access 1000 DAT is 12.7 inches wide by 14.7 inches high by 5.5 inches deep and is made of heavy gauge metal. The enclosure can be wall, pole, or pedestal mounted in an outside plant environment. **Figure 2** shows the inside layout of the Total Access 1000 DAT. Individual access modules insert from the front. All of the facilities terminate within the enclosure. Surge protection is also provided within the enclosure.
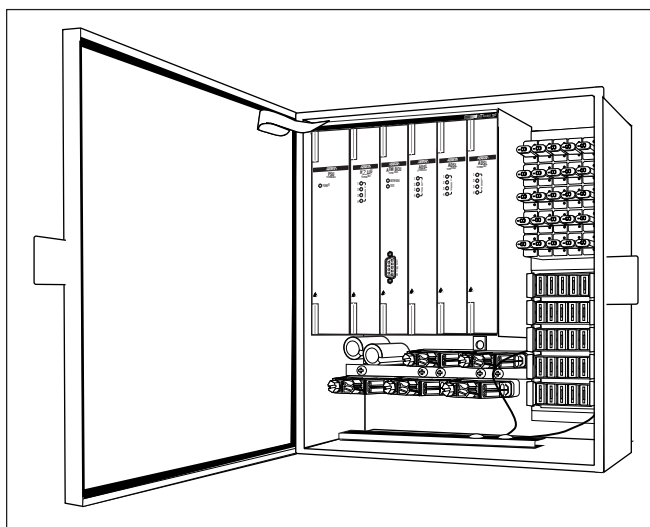
Figure 2. Total Access 1000 DAT Inside Layout

Features
The Total Access 1000 DAT platform features include the following:

- Pole or Wall mount outside plant cabinet
- HDSL2 span powered at +/-190 VDC
- Supports up to 12 ADSL plus POTS lines
- Supports up to 24 ports of ADSL or SHDSL or combination of both
- Uses incoming POTS from the Network and provides ADSL plus POTS signal to the loop
- Supports local and remote provisioning
- GR-487 Compliance for Remote Enclosures (In process)
- Meets NEBS Level 3 requirements
- 10 Year Warranty

Environmental Requirements
Operating Temperature: -40ºC to +65ºC.
Storage Temperature: -40ºC to +85ºC.
Relative Humidity: 95 percent, noncondensing.

Architecture
The Total Access 1000 DAT system is comprised of an outside plant (OSP) housing, Quad HDSL2 Line Interface Unit (Quad H2LIU), a span powered ATM Power Supply Unit (PSU), ATM Bank Controller Unit (ATM BCU), and ADSL Access Modules.

The OSP housing contains all external terminations including the HDSL2 interface, POTS termination, ADSL plus POTS loop termination, and grounding terminations. The OSP housing provides surge protection for both the network and subscriber interfaces.

The Total Access 1000 DAT receives span powering from a network using a Total Access HDSL2 Central Office (H2TUC) Access Module. The H2TUC terminates a DS1 IMA interface from the DSLAM or ATM switch. The H2TUC converts the DS1 IMA signal to 2-wire HDSL and adds span powering.

The Quad H2LIU module provides the network interface for the Total Access 1000 DAT. The H2LIU terminates three or four HDSL2 signals from the network and passes span powering to the PSU. The PSU terminates the span power from the network and provides regulated operating voltages to all components within the Total Access 1000 DAT. The HDSL2 signal is converted to an ATM DSX-1 IMA signal and passed to the ATM BCU. The ATM BCU routes all ATM traffic between the network and the loop using PVCs.

Each of the three Quad ADSL Access Modules communicates via the backplane with the ATM BCU and accepts four POTS signals from the CO. Each ADSL module provides four 2-wire ADSL plus POTS interfaces toward a customer. A fully loaded system uses three Quad ADSL Access Modules and provides 12 data plus voice services. See **Figure 3** for an application diagram.

Span Power

The Total Access 1000 DAT is completely powered from the HDSL2 spans and requires at least three spans of HDSL2 for proper operation.

WARNING

Risk of electric shock. Voltages up to 190 VDC may be present on telecommunications circuit. Always ensure that the frame ground is connected to the lug inside the OSP housing.
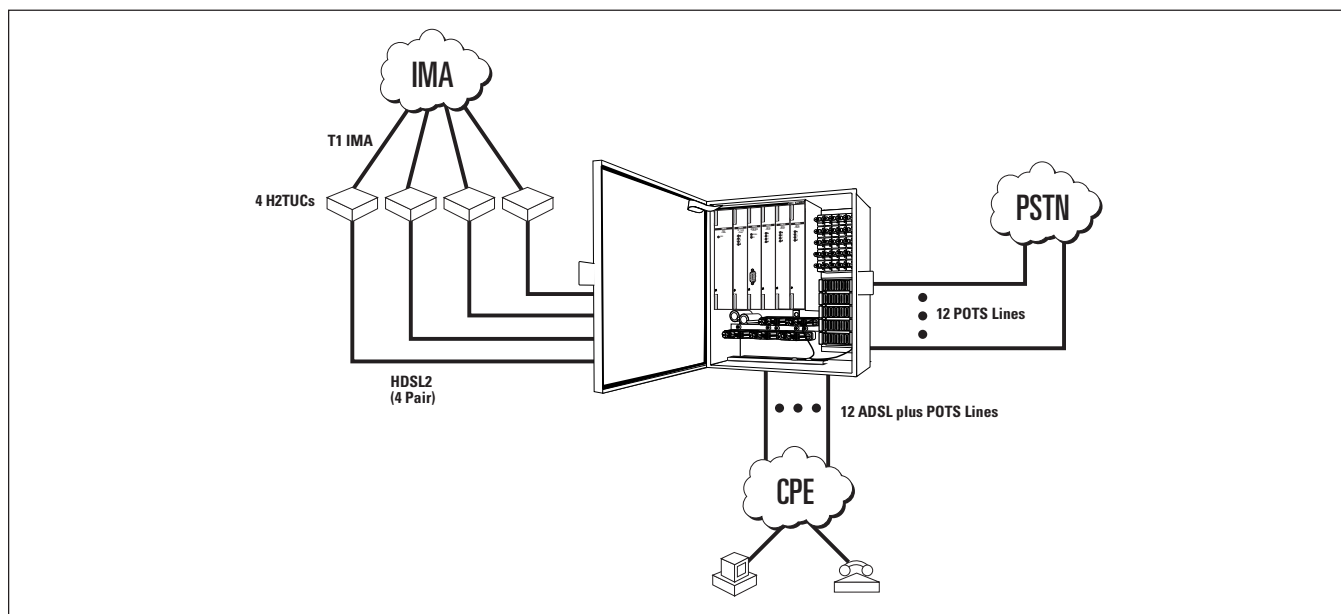
Figure 3. Total Access 1000 DAT Typical Application

The incoming HDSL2 spans are terminated on P2, P3, P4, and P5. (See **Figure 4**). These terminations provide surge protection for each HDSL2 span. Only three span powered pair are needed for operation, but using four span powered pair provides redundant power and/or extra bandwidth to the Total Access 1000 DAT.

Span powering meets all requirements of Class A2 voltages as specified by Bellcore GR-1089-CORE.

Modules

The Total Access 1000 DAT uses several modules to operate and provide multiple services. There are two classes of modules, Common Modules and Access Modules. The Common Modules consist of the PSU, Quad H2LIU, and ATM BCU. These modules are needed to power up the shelf and to provide the needed ATM switching fabric for the system. The Access Modules consist of Quad SHDSL, Quad ADSL, and Quad ADSL plus POTS and are used to provide services to customers.
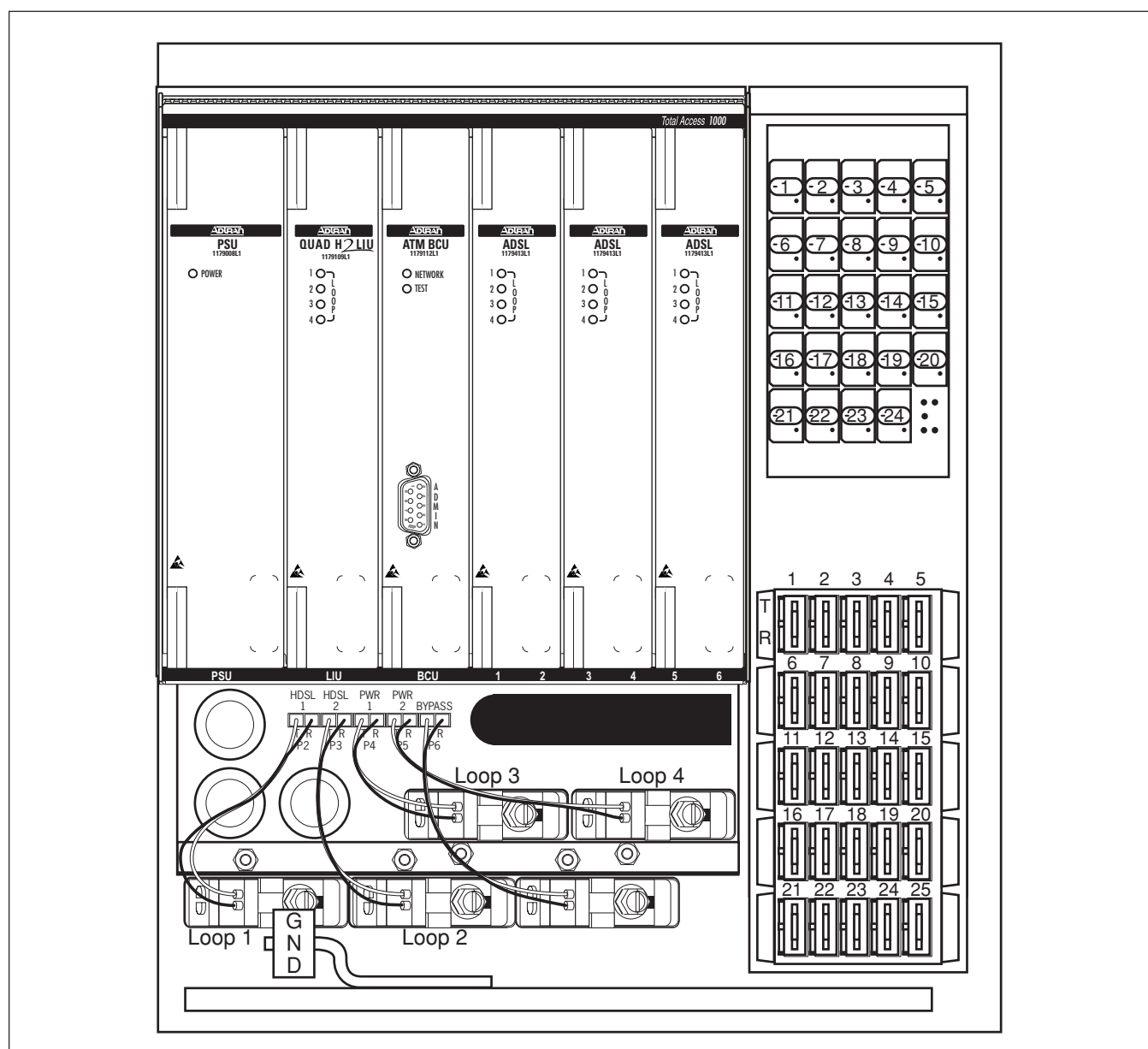
Figure 4. Total Access 1000 DAT HDSL2 Connections

The Total Access 1000 DAT is designed to support 24 ports of ADSL, 24 ports of SHDSL, up to a 24 port mixture of ADSL and SHDSL, or 12 ADSL plus POTS ports. Currently, ADTRAN offers the dual wide 4 port ADSL plus POTS module for use with the Total Access 1000 DAT. The Total Access 1000 DAT provides 6 access module slots that have access to 4 copper pairs each.

Quad ADSL plus POTS

The Quad ADSL plus POTS Access Module is a dual wide module that fits into two slots in the Total Access 1000 DAT and provides four ports of ADSL plus POTS. See **Figure 5**. The POTS signal must be wired in from the Network. The Quad ADSL module takes in the POTS and combines it with the ADSL on one single pair. The customer premises must be equipped with an ADSL plus POTS splitter for the POTS signal to the telephone and the proper Customer Premise Equipment (CPE) to terminate ADSL.

PSU

The Total Access 1000 DAT PSU is a common module plug-in unit designed for use in the Total Access 1000 DAT. See **Figure 6**. The unit inserts directly into the PSU slot on the Total Access 1000 DAT. The front panel provides an LED for power indication.

The Total Access 1000 DAT PSU operates on -190 VDC received from the span-powered HDSL2 pairs. The PSU converts the incoming span power to regulated voltages for distribution to other modules in the system.

The PSU does not require provisioning to operate in the system.

Figure 5. Total Access 1000 DAT Quad ADSL plus POTS Access Module
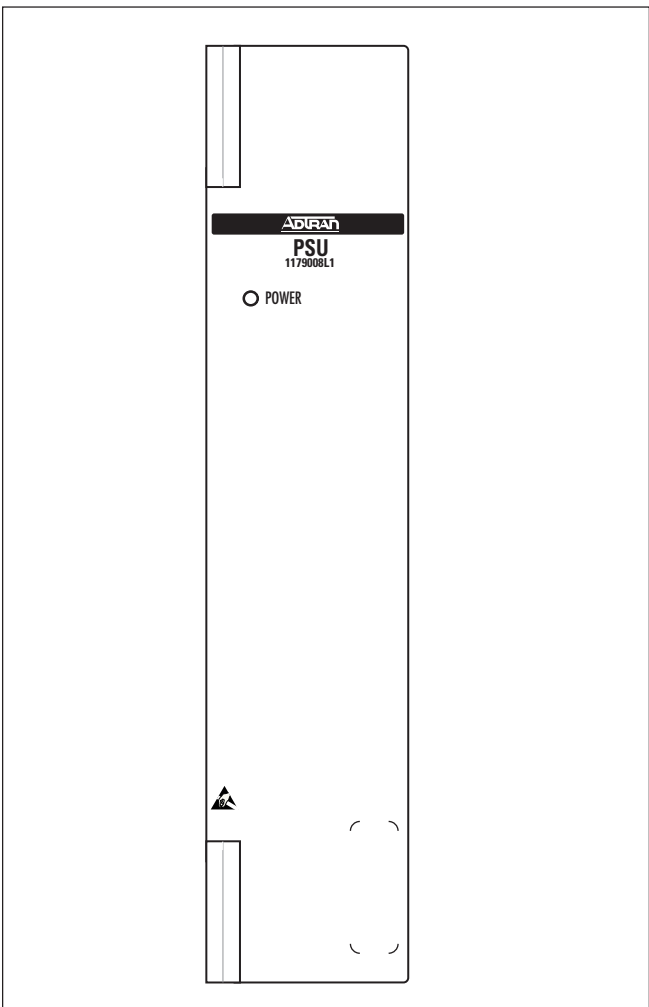
Figure 6. Total Access 1000 DAT PSU

Quad H2LIU

The Total Access 1000 DAT Quad H2LIU is a network terminating common plug-in unit used to terminate the HDSL2 circuit over 2-wire metallic facilities. See **Figure 7**. The Quad H2LIU terminates the HDSL2 signals originating from the H2TUCs and hands off an ATM DS1 IMA signal to the ATM BCU.

Each HDSL2 local loop operates as an independent subsystem, each operating over a single twisted pair. The Quad H2LIU communicates over these two twisted pairs to the Total Access 1000 H2TUCs located at the CO.

ATM BCU

The Total Access 1000 DAT Bank Controller Unit is a common module plug-in unit. See **Figure 8**. The unit inserts directly into the BCU slot on the Total Access 1000 DAT shelf. The unit terminates the ATM DS1 IMA from the H2LIU and provides distributed bandwidth to the access module slots upon request. The ATM BCU provides all control functions for the Total Access 1000 DAT common units and access modules. The front panel has one DB-9 connection, a network status LED, and a TEST status LED.

The Total Access 1000 DAT ATM BCU provisions, operates, monitors, and tests all Total Access 1000 DAT access modules. The ATM BCU provides the ATM switching fabric for the system.
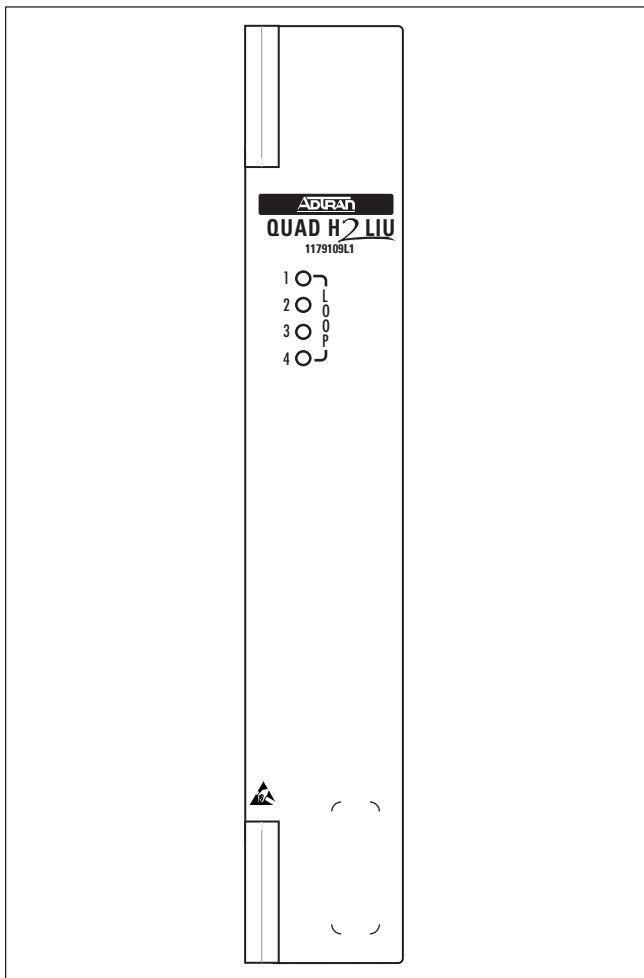
Figure 7. Total Access 1000 DAT Quad H2LIU
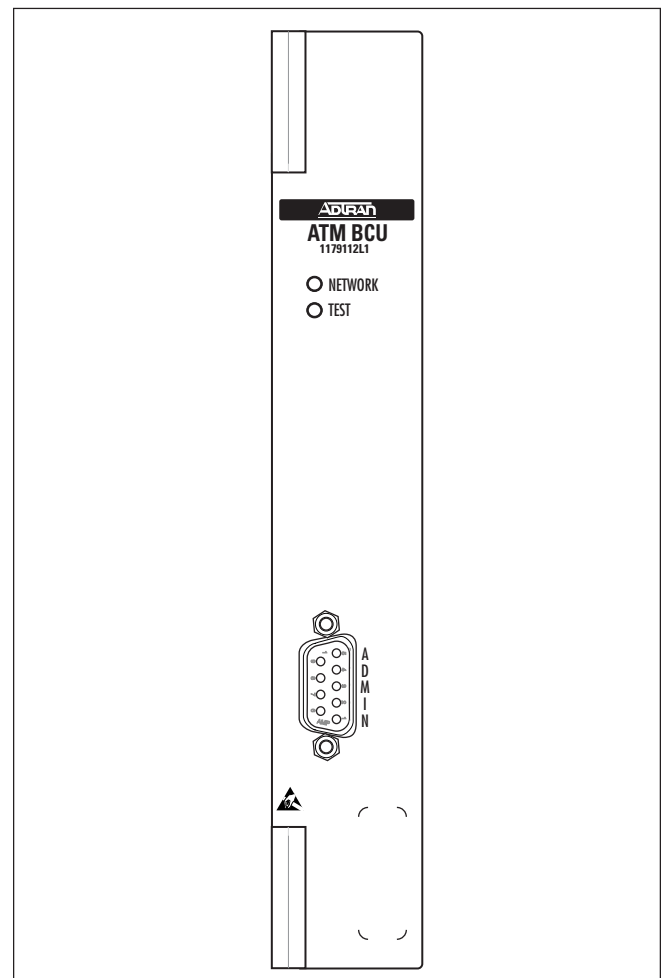
Figure 8. Total Access 1000 DAT ATM BCU

2. INSTALLATION/OPERATION

C A U T I O N !
SUBJECT TO ELECTROSTATIC DAMAGE
OR DECREASE IN RELIABILITY.
HANDLING PRECAUTIONS REQUIRED.

After unpacking the unit, inspect it for damage. If damage is noted, file a claim with the carrier, then contact ADTRAN. Refer to *Warranty and Customer Service*.

The Total Access 1000 DAT can be wall, pole, or pedestal mounted. Templates are provided with each system to support accurate mounting of the enclosure.

The Total Access 1000 DAT complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by ADTRAN could void the user's authority to operate this equipment.

Compliance

CAUTION
Per GR-1089-CORE October 2002, Section 9, the Total Access 1000 system is designed and intended only for installation in a DC-C (common) Bonding and Grounding system. It is not intended or designed for installation in a DC-I (isolated) Bonding and Grounding system.

See **Table 1** for Compliance Codes.

Required Clearances
A minimum 18 inches of clearance is required in front of the chassis to allow for opening of the enclosure door.

Mounting Brackets
The Total Access 1000 DAT enclosure contains brackets that support wall, pole, or pedestal mounting.

Table 1. Total Access 1000 DAT Compliance Codes

Code	Input	Output
(Chassis)		
Power Code (PC)	C	C
Telecommunication Code (TC)	X	X
Installation Code (IC)	E	–
(PSU)		
Power Code (PC)	C	C
Telecommunication Code (TC)	X	–
Installation Code (IC)	A	–
(H2LIU)		
Power Code (PC)	C	C
Telecommunication Code (TC)	X	–
Installation Code (IC)	A	–
(ADSL plus POTS)		
Power Code (PC)	C	C
Telecommunication Code (TC)	–	X
Installation Code (IC)	E	–
(ATM BCU)		
Power Code (PC)	C	C
Telecommunication Code (TC)	–	–
Installation Code (IC)	A	–

Tools Needed (Wall Mount or Polemount)
The Total Access 1000 DAT Chassis mounts and connects with standard fasteners and hand tools:
- Six #6 x 3/4-inch, flat-head wood screws.
- Drill and drill bit set.
- Flat-head screwdriver (medium).
- Two Phillips-head screw drivers (small /medium)
- Selected punch-down block and tool.

Mounting The Enclosure
Install the enclosure as follows:
1. Position the mounting template at the desired location, observe required clearances.
2. Ensure the mounting template is plumb then mark through the template holes to identify where the pilot holes will be drilled.
3. Using a 1/16-inch bit, drill pilot holes at the marked locations.
4. Mount the chassis using the six #6 by 3/4-inch flat-head wood screws.

Connections

All subscriber loop and network connections are made through termination blocks. Refer to Figure 4. Connections for the commons and access modules are made through the backplane. No additional backplane wiring is necessary for operation.

UL Deployment Guidelines

- Terminate enclosure to a reliable ground source.
- This unit shall be installed in accordance with the requirements of NEC NFPA 70.

ADSL and POTS Connection

One 25-pair termination block provides the interconnect wiring for the access modules located in slots 1 through 6 of the enclosure. When using the Quad ADSL plus POTS Access Module, the POTS signal is provided by the network and is connected to certain pairs on the Total Access 1000 DAT termination block. The ADSL plus POTS signal is then delivered to the customer by other pairs on the termination block. See **Table 2** for pair assignments.

Table 2. Termination Block Pin Assignments

Pair	Connection Type	IN from Network/ OUT to Customer	Access Module	Port
1	POTS	IN	1	1
2	ADSL plus POTS	OUT	1	1
3	POTS	IN	1	2
4	ADSL plus POTS	OUT	1	2
5	POTS	IN	1	3
6	ADSL plus POTS	OUT	1	3
7	POTS	IN	1	4
8	ADSL plus POTS	OUT	1	4
9	POTS	IN	3	1
10	ADSL plus POTS	OUT	3	1
11	POTS	IN	3	2
12	ADSL plus POTS	OUT	3	2
13	POTS	IN	3	3
14	ADSL plus POTS	OUT	3	3
15	POTS	IN	3	4
16	ADSL plus POTS	OUT	3	4
17	POTS	IN	5	1
18	ADSL plus POTS	OUT	5	1
19	POTS	IN	5	2
20	ADSL plus POTS	OUT	5	2
21	POTS	IN	5	3
22	ADSL plus POTS	OUT	5	3
23	POTS	IN	5	4
24	ADSL plus POTS	OUT	5	4

The connections are terminated by pulling out the connector, slipping the wire through the access holes, then pushing the connectors back into place (see Figure 4).

HDSL2 Connection

The HDSL2 spans are connected to P2, P3, P4, and P5 (see Figure 4). At least 3 of the four HDSL2 spans must provide span power to the Total Access 1000 DAT. Each HDSL2 span may be configured to transport one DS1 IMA to and from the Total Access 1000 DAT. The Total Access 1000 DAT can operate with one, two, three, or four DS1 IMA signals being provided by the network.   All terminations provide surge and corrosion protection.

Power Connection

There are no power terminations. All power is derived from the HDSL2 spans.

Timing Supply

There are no timing terminations. Timing is derived from the HDSL2 spans.

Office Alarms

There are no alarm terminations. All alarms are carried to the central office via the HDSL2 (T1) overhead. Carrier alarm conditions such as a Red, Yellow, or Blue (unframed all 1s) will be reported by the central office equipment.

Installing cards

To install a Total Access 1000 DAT module, grasp the unit by the front panel while supporting the bottom edge. Align the card edges to the guide grooves and insert the unit until the edge connector seats firmly into the backplane. Lock the card in place by pushing in the locking lever in against the front panel of the module.

Front Panel Indicators

PSU Front Panel Indicators

The Total Access 1000 DAT PSU front panel contains a POWER LED indicator. The POWER LED is ON when the proper power is being received from the HDSL2 pairs and is being distributed properly to the other modules in the chassis. **Table 3** gives the front panel indicator descriptions.

Quad H2LIU Front Panel Indicators

The Total Access 1000 DAT Quad H2LIU front panel contains four LED indicators. They are Loop 1, Loop 2, Loop 3, and Loop 4.

Table 3. Front Panel LEDs

LED	Indication	Description
PSU POWER	*Off*	The H2TU-C has completely failed or the shelf has no power
	Red	The H2TU-C has failed part of the self test
	Yellow	The H2TU-C is being software downloaded
	Green	The H2TU-C has passed the self-test
	Flashing Green	The H2TU-C is being accessed (SCU terminal or four character display)
Quad H2LIU Loop 1 to 4	*Off*	The corresponding loop is provisioned for the OOS Unassigned state
	Red	The coresonding loop is In Service and a fault condition exists on the circuit
	Yellow	The corresponding loop is in a test
	Green	The corresponding loop is functioning properly
	Flashing Green	Indicates that the H2TU-C is provisioned for the OOS Maintenance state
	Flashing Yellow	The H2TU-C is being software downloaded

ATM BCU Front Panel Indicators
The network LED labeled NETWORK on the front panel of the ATM BCU provides status information for the network DS1 IMA using a color-coded message format. The TEST LED provides test status information for the network and access modules. See **Table 4**.

Quad ADSL Access Module Front Panel Indicators
After the initialization sequence, the status of the each ADSL loop is reflected by the color of the corresponding LOOP LED. See **Table 5** for descriptions.

3. PROVISIONING

ADMIN Port
The ADMIN interface (DB-9 connector) on the Total Access 1000 DAT ATM BCU is used to change provisioning options, obtain access module status through menu screens, and initiate tests on circuits. To access the menu screens, connect a VT100 terminal or computer running a terminal emulation program to the craft interface port using a standard male-to-female RS-232, DB-9 cable. Craft port settings are as follows:

- 9600 Baud
- No parity
- 8 Data bits
- 1 Stop bit

CAUTION

The ATM BCU retains provisioning setup when removed from the chassis. If inserted into another chassis, the provisioning setup is invoked on that chassis' access modules.

Table 4. ATM BCU Front Panel LEDs

LED	Indication	Description
Network	Green	IMA group is Up
	Red	IMA group is Down
	Off	No power or hardware failure
Test	Green	This LED is currently unused, but will be green when power is applied to module
	Off	No power or hardware failure

Table 5. Quad ADSL plus POTS Access Module Front Panel LEDs

LED	Indication	Description
Loop 1 - 4	Green	Loop Up
	Flashing Green	Loop training
	Red	Loop Down, not attempting to train up
	Yellow	Loop in test
	Off	Out of Service - Unassigned

Windows HyperTerminal

Windows HyperTerminal can be used as a VT100 terminal emulation program. Open HyperTerminal by selecting PROGRAMS / ACCESSORIES / HYPERTERMINAL. Refer to the Help section of HyperTerminal for additional questions.

NOTE

To ensure proper display background in Windows HyperTerminal, select VT100 terminal emulation under SETTINGS.

Password

Upon initial connection, press the <Esc> key one time to bring up the prompt for the Account Name. The default Account Names are ADMIN, READWRITE, and READONLY in all capital letters.

NOTE

All Account Names and Passwords are case sensitive. The default Account Names and Passwords should be entered in UPPER CASE.

The factory default Password is PASSWORD in all capital letters for all default Account Names. Each Account Name has a different permission level. ADMIN, by default, is the System Administrator login and allows provisioning of every provisionable option. The READWRITE Account Name corresponds to the Technician login, and restricts the user from making changes to accounts, but allows provisioning of most provisionable options that correspond to services provided by the Total Access 1000 DAT. The READONLY Account Name is just that, an account that allows read-only access to the Total Access 1000 Menus. Each password can be changed to a user-selected password if desired. To prevent a remote user from not being able to access the menus of the Total Access 1000 DAT after a user has accessed the craft port, a timed auto-logout will logout the last user after approximately eight minutes of keyboard inactivity. If this happens during provisioning, simply logon to the system again and continue from the last completed provisioning change.

Menu Navigation

To traverse through the menus, type the number corresponding to the desired selection and press <Enter>. On some options, it is necessary to press the space bar to scroll through available options and press <Enter> when the correct option is shown. Fields that need a manual entry are completed by pressing the space bar to initiate the entry, type the entry, then press <Enter> to complete the entry. While viewing any sublevel menu, the <Esc> key may be used to move up one level or to correct an incorrect entry (before pressing <Enter>). See **Figure 9** for the Total Access 1000 DAT menu tree.

Module Provisioning
System Provisioning

The ATM BCU provides the system level provisioning for the Total Access 1000 DAT. System Level menus include Bank Controller Unit, Line Interface Unit, Access Modules, System Alarms, Configuration Prompt, and Contact Information. Each of these individual menus is available for selection upon a successful logon to the Total Access 1000 DAT. Provisioning for the BCU, LIU, and Access Modules is covered in the following subsections. The System Alarms menu provides real-time information concerning both acknowledged and unacknowledged alarms for the Total Access 1000 DAT. Each alarm is displayed with a date and time stamp, the Level of the alarm (Critical, Major, Minor, Alert, or Info), and an Event Description. The configuration Prompt provides access to a command line driven menu system. This provisioning option will be discussed in one of the following subsections. The Contact Information menu provides ADTRAN's contact information and can not be edited.

Login

Account Name
Password

1. Bank Controller Unit
1. Configuration
2. Circuit Management

1. ATM Port Provisioning
2. ATM PVC/PVP Management
3. ATM Traffic Parameter Defaults
4. IMA

1. Configuration
2. Provisioning
3. Status/Failure Monitoring

1. Group FM Status
2. All Links FM Status

4. Performance Monitoring Data
1. Present
2. Previous

5. IMA Diagnostic Testing
1. RX DRAM Test
2. TX DRAM Test

1. Present
2. Previous

1. IMA Facility

IMA Group
Unassigned
Pass Through

IMA Transmit ID (0-255)
IMA TX Frame Length
Min. TX Active Links
Min. RX Active Links
Max. Link Diff. Delay (0-100)
Group Operation Mode
Data
Disable

Out of Service - Maintenance
Out of Service - Unassigned
Out of Service - Maintenance
In Service

2. IMA Group

3. IMA Links

4. Shortcut Setup
1. Force All Facilities Into Unassigned
2. Force Facility - 0 Init Pass Through (PHY 0)
3. Force Facilities Into IMA Group - 1

5. IMA Scrambler
1. Enable
2. Disable

6. Restore Factory Defaults

3. System Management
1. Password Control
1. Set Password
2. Auto Logout
3. Restore Factory Defaults

2. IP Address
1. IP Address
2. Subnet Mask
3. VPI
4. VCI
5. Peak Cell Rate
6. Remote IP Address

3. Time/Date
1. Adjust Time
2. Adjust Date

4. Baud Rate
1. 9600
2. 19200
3. 38400

5. Upload New Code
1. Upload New Code
2. Exit

2. Line Interface Unit
1. Configuration
2. Provisioning (Choose loop 1 - 4)
3. Status
1. Zero Registers
2. Restart Min/Max

4. Test
1. H2TU-R Loop Up Network - Loop 1
2. H2TU-R Loop Up Network - Loop 2
3. H2TU-R Loop Up Network - Loop 3
4. H2TU-R Loop Up Network - Loop 4
5. H2TU-R Loop Down Network - All Loops
6. H2TU-R Loop Up Backplane - All Loops
7. H2TU-R Loop Down Backplane - All Loops

5. Performance
1. Reset Data
2. 15 Min Data
3. 24 Hr Data

6. Code Upload

1. NIU Loopback
1. Enable
2. Disable

2. Loopback Time Out
1. None
2. 20 Minutes
3. 60 Minutes
4. 120 Minutes

3. Framing Mode
1. SF
2. ESF

3. Access Modules
1. Access Module in Slot 1
2. Access Module in Slot 2
3. Access Module in Slot 3
4. Access Module in Slot 4
5. Access Module in Slot 5
6. Access Module in Slot 6

4. System Alarm
1. Clear
2. Next Page

5. Configuration Prompt
6. Contact Information
7. Logoff

Figure 9. Total Access 1000 DAT Menu Tree

ATM Bank Controller Unit

The menus for the ATM BCU are accessed by logging onto the system and selecting the option corresponding to Bank Controller Unit from the Main Menu. Menus provided by the BCU include Configuration, Circuit Management, and System Management.

Configuration Menu

The Configuration menu for the ATM BCU provides the following information:

- Unit Name
- CLEI Code
- Part Number
- Product Revision
- Software Revision

This information can not be manually edited; however, when a software upgrade is performed, the software revision field will reflect the new version.

Circuit Management Menu

The Circuit Management menu for the ATM BCU allows the user to adjust the settings that effect the ATM traffic handled by the Total Access 1000 DAT. This includes provisioning Permanent Virtual Circuits/Permanent Virtual Paths (PVC/PVP), ATM ports, and IMA Facilities. The Circuit Management menu has four sub-menus including the following:

- ATM Port Provisioning
- ATM PVC/PVP Management
- ATM Traffic Parameter Defaults
- IMA

The ATM Port Management sub-menu, shown in **Figure 10**, allows the user to select what type of signaling is used for each specific port, enable or disable the Interim Link Management Interface (ILMI) for each port, add/modify the PVC/PVPs for each port, and view each port's performance monitoring statistics.

```
         Total Access 1000 (ATM)
         Unacknowledged Alarms: Major




                             ATM Port Provisioning

         Card  Port    Signaling  ILMI     Total PVP/PVC  ATM Port Stats
         BCU   Netw      None     Disable      0/3            View
         1     1         None     Disable      0/1            View
         1     2         None     Disable      0/1            View
         1     3         None     Disable      0/1            View
         1     4         None     Disable      0/0            View
         3     1         None     Disable      0/0            View
         3     2         None     Disable      0/0            View
         3     3         None     Disable      0/0            View
         3     4         None     Disable      0/0            View
         5     1         None     Disable      0/0            View
         5     2         None     Disable      0/0            View
         5     3         None     Disable      0/0            View
         5     4         None     Disable      0/0            View


         Press the Enter key to view statistics for this card/port
```

Figure 10. ATM Port Provisioning Menu

The ATM PVC/PVP Management sub-menu, shown in **Figure 11**, allows the user to provision PVC/PVPs for each port. (This is the same menu that can be accessed from the ATM Port Management menu.)

The ATM Traffic Parameter Defaults sub-menu allows the user to provision default settings for each type of PVC/PVP that is to be provided from the Total Access 1000 DAT. See **Figure 12**. The default settings for each service type should be provisioned to match the commonly used settings for that type. Each PVC/PVP that needs special settings may be edited on a per PVC/PVP basis. Settings changed when provisioning the individual PVC/PVP override the corresponding default setting.

```
   PVC/PVP Management - Card: All   Port: All
                                       Endpoint 1              Endpoint 2
              Circuit ID              Card Port VPI VCI <-> Card Port VPI VCI
   1     ADSLloop1                    BCU Netw 0   100      1    1   0   35
   2     ADSLloop2                    BCU Netw 0   101      1    2   0   35
   3     ADSLloop3                    BCU Netw 0   102      1    3   0   35




   Circuit ID: ADSLloop1                        Pkt Discard Tagging   Done?
   Select:                                        Enabled    N/A       No
              Endpoint1 -> Endpoint2       Endpoint2 -> Endpoint1
      Service   PCR(0+1)                   PCR(0+1)
   1   UBR      Best Effort                Best Effort
   Endpoint 1: Card Port  VPI   VCI  <-> Endpoint 2: Card Port  VPI   VCI
               BCU  Netw  0     100                   1    1     0     35
   Enter # or use arrow keys to pick circuit; space bar for choices or c,d,m,n,p,t
```

Figure 11. ATM PVC/PVP Management Menu

```
   Total Access 1000 (ATM)
   Unacknowledged Alarms: Major



                        ATM Traffic Parameter Defaults
                        Endpoint 1 -> Endpoint 2          (Both Directions)
   Traffic Type PCR(0) PCR(0+1) SCR(0) SCR(0+1) MBS(0) MBS(0+1) Tagging Pkt Discard
   UBR          N/A    Best Eff N/A    N/A      N/A    N/A      N/A     Yes
   CBR          N/A    0        N/A    N/A      N/A    N/A      No      Yes
   VBR-rt       N/A    0        N/A    0        N/A    0        No      Yes
   VBR-nrt      N/A    0        N/A    0        N/A    0        No      Yes


                        Endpoint 2 -> Endpoint 1
   UBR          N/A    Best Eff N/A    N/A      N/A    N/A
   CBR          N/A    0        N/A    N/A      N/A    N/A
   VBR-rt       N/A    0        N/A    0        N/A    0
   VBR-nrt      N/A    0        N/A    0        N/A    0


          Note: This screen allows modification of the DEFAULT settings of the
          various traffic parameters. These settings can be overridden on
          a per PVC/PVP basis in the PVC/PVP Management menu.
```

Figure 12. ATM Traffic Parameter Defaults Menu

The IMA menu provides additional sub-menus including:

- Configuration
- Provisioning
- Status / Failure Monitoring
- Performance Monitoring Data
- IMA Diagnostic Testing

The IMA Configuration menu provides information concerning the IMA revision, version and type. The IMA Configuration menu is a read-only display that can only be updated by installing new software revisions.

The IMA Provisioning menu allows the user to view and make changes to IMA Facilities, IMA Groups and IMA Links. The IMA Provisioning menu also provides a shortcut setup menu that allows the user to easily place all IMA Facilities into group 1, unassign all facilities, or put each facility in pass-through. The IMA Provisioning menu also allows the user to enable or disable scrambling on the IMA signal. This option must match the setting on the Network end of the IMA loop. Each of the individual IMA Facilities may be placed in the IMA Group, Unassigned State, or Pass-Through State via the IMA Facility sub-menu. See **Figure 13**.

```
Total Access 1000 (ATM)
Unacknowledged Alarms: None



                       IMA Facility Provisioning

                    Facility(0)   Facility(1)   Facility(2)   Facility(3)
Receive Mode        IMA_Group     IMA_Group     IMA_Group     IMA_Group
Transmit Mode       IMA_Group     IMA_Group     IMA_Group     IMA_Group

Receive Group       1             [13;38H3      1             1
Receive Link ID     0                           1             2
Receive ATM Address N/A           N/A           N/A           N/A

Transmit Group      1             1             1             1
Transmit Link ID    0             1             2             3
Transmit ATM Address N/A          N/A           N/A           N/A
```

Figure 13. IMA Facility Provisioning Menu

The IMA Group Provisioning sub-menu, shown in **Figure 14**, allows the user to make changes to the following options:

- IMA Transmit ID
- IMA TX Frame Length
- Minimum TX Active Lengths
- Minimum RX Active Lengths
- Maximum Length Differential Delay
- Group Operation Mode

The IMA Links sub-menu allows the user to enable or disable the TX and/or RX portions of each IMA link individually. All the options, provisionable under the IMA Provisioning menu, may be set to the factory default settings by choosing the option corresponding to Restore Factory Defaults on the IMA Group Provisioning menu.

```
        Total Access 1000 (ATM)
        Unacknowledged Alarms: None



                            IMA Group Provisioning


            IMA Transmit ID (0-255)         1
            IMA TX Frame Length             128
            MRX Active Links                1
                                            1
            Max. Link Diff. Delay (0-100)   100
            Group Operation Mode            Out of Service - Maintenance



        Note: Changing ID or Frame Length requires that All Facilities be UNASSIGNED !
```
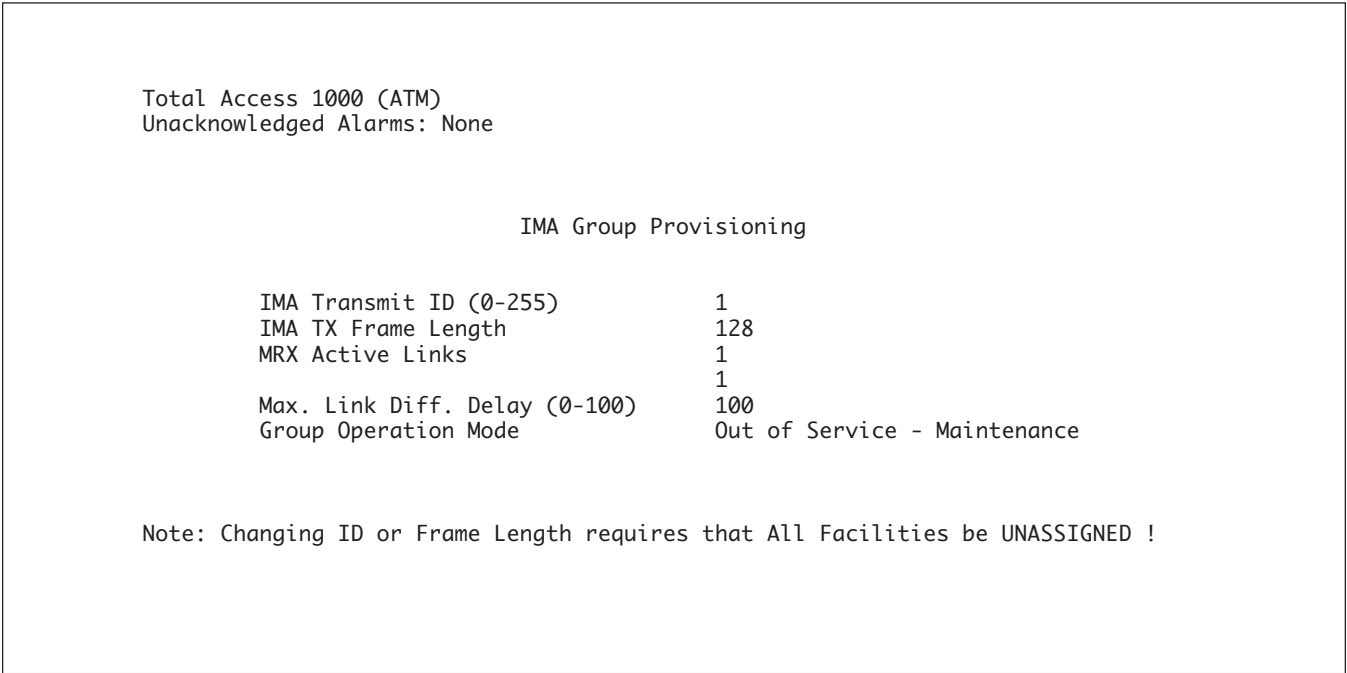
Figure 14. IMA Group Provisioning Menu

The IMA Status / Failure Monitoring (FM) Status screen allows the user to view statistics vital to successful operation of the Total Access 1000 DAT. This screen provides a high-level look at the IMA Group or a detailed look at the IMA Links. The Group Failure Monitoring Status screen is shown in **Figure 15** and the All Links Failure Monitoring Status screen is shown in **Figure 16**.

```
        Total Access 1000 (ATM)                 2/06/02  11:07
        Unacknowledged Alarms: None


                        IMA Group 1 Failure Monitoring Status

        NE Group State              : Operational
        FE Group State              : Operational
        NE Failure Status           : No Failure
        FE Failure Status           : No Failure
        Link With Least Delay       : 3
        Max Link Differential Delay : 0
        Configured TX Links         : 4
        Active Tx Links             : 4
        Configured RX Links         : 4
        Active Rx Links             : 4
        Group Traffic State Machine : Up
        FE Failure Data             : Available






                        '?' - System Help Screen
```
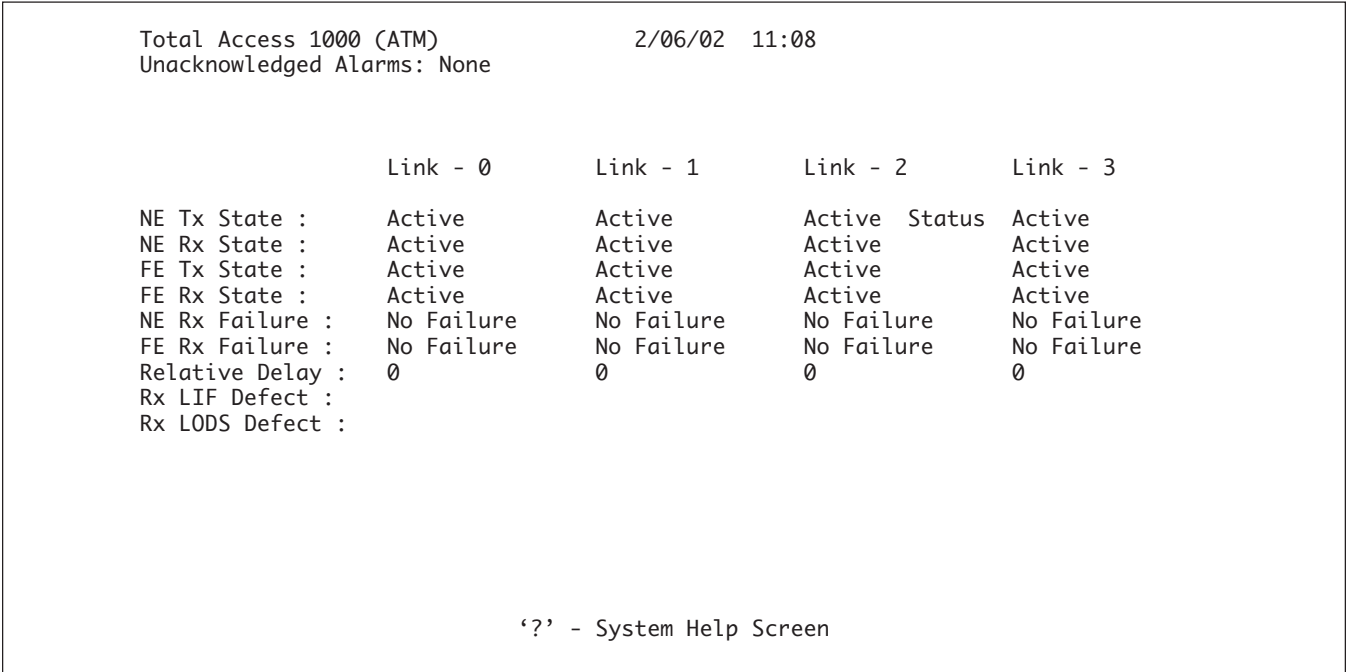
Figure 15. Group Failure Monitoring Status Screen

```
      Total Access 1000 (ATM)                 2/06/02  11:08
      Unacknowledged Alarms: None



                      Link - 0       Link - 1       Link - 2       Link - 3

      NE Tx State :   Active         Active         Active  Status Active
      NE Rx State :   Active         Active         Active         Active
      FE Tx State :   Active         Active         Active         Active
      FE Rx State :   Active         Active         Active         Active
      NE Rx Failure : No Failure     No Failure     No Failure     No Failure
      FE Rx Failure : No Failure     No Failure     No Failure     No Failure
      Relative Delay : 0             0              0              0
      Rx LIF Defect :
      Rx LODS Defect :





                      '?' - System Help Screen
```

Figure 16. All Links Failure Monitoring Status Screen

The IMA Performance Monitoring Data Menu provides the user with present Performance Monitoring (PM) statistics, as well as PM statistics for the previous 6 hours. An example of the Present PM status screen for All Links is shown in **Figure 17**.

The IMA Diagnostic Testing Menu provides the ability to run both transmit and receive DRAM tests. These tests are destructive and therefore can ONLY be run while all IMA Facilities are unassigned.

System Management Menu
The System Management Menu allows the user to modify non-service affecting parameters of the ATM BCU. Parameters that may be adjusted via the System Management Menu include the following:
  • Passwords
  • IP Address and Management PVC
  • Time and Date
  • Craft Port Baud Rate

The Password Control sub-menu allows the user to provision three passwords, each with a different permission level. There are three permission levels offered, Read Only, Technician, and System Administrator. This is explained in detail in the *Password* section of this document (above).

The IP Address sub-menu allows the user to provision the management PVC, the IP parameters for management, and it displays the MAC Address for the ATM BCU. These parameters must be provisioned before the system may be remotely managed through in-band Telnet.

The Time/Date sub-menu allows the user to set the date and time. The date in entered in a MM/DD/YY format and the time is entered in a 24hr clock manner.

The Baud Rate sub-menu allows the user to set the baud rate of the craft port to 9600, 19200, or 38400 bps. The terminal or terminal emulator program must be set at the matching baud rate to achieve communication with the Total Access 1000 DAT.

The System Management Menu also allows the user to upgrade the software for the ATM BCU. New software may be uploaded using a Craft port or Telnet connection with Y-modem protocol.

Line Interface Unit
The menus for the LIU are accessed by logging onto the system and selecting the option corresponding to Line Interface Unit from the Main Menu. Menus provided by the LIU include Configuration, Provisioning, Status, Test, Performance, and Code Upload.

```
      Total Access 1000 (ATM)                 2/06/02  13:02
      Unacknowledged Alarms: None


                         IMA Link PM Data - Present


                         Link - 0      Link - 1      Link - 2      Link - 3
      IMA Violations     : 0              0              0              0
      NE Sev. Err. Sec.  : 0              0              0              0
      NE Unavail. Sec.   : 0              0              0              0
      NE Tx Unusable Sec. : 0             0              0              0
      NE Rx Unusable Sec. : 0             0              0              0
      NE Tx Failures     : 0              0              0              0
      NE Rx Failures     : 0              0              0              0
      OIF Anomalies      : 0              0              0              0
      Tx Stuffs          : 1634           1634           1633           1634
      Rx Stuffs          : 1634           1633           1634           1634
      FE Sev. Err. Sec.  : 0              0              0              0
      FE Unavail. Sec.   : 0              0              0              0
      FE Tx Unusable Sec. : 0             0              0              0
      FE Rx Unusable Sec. : 0             0              0              0
      FE Tx Failures     : 0              0              0              0
      FE Rx Failures     : 0              0              0              0


                         '?' - System Help Screen
```
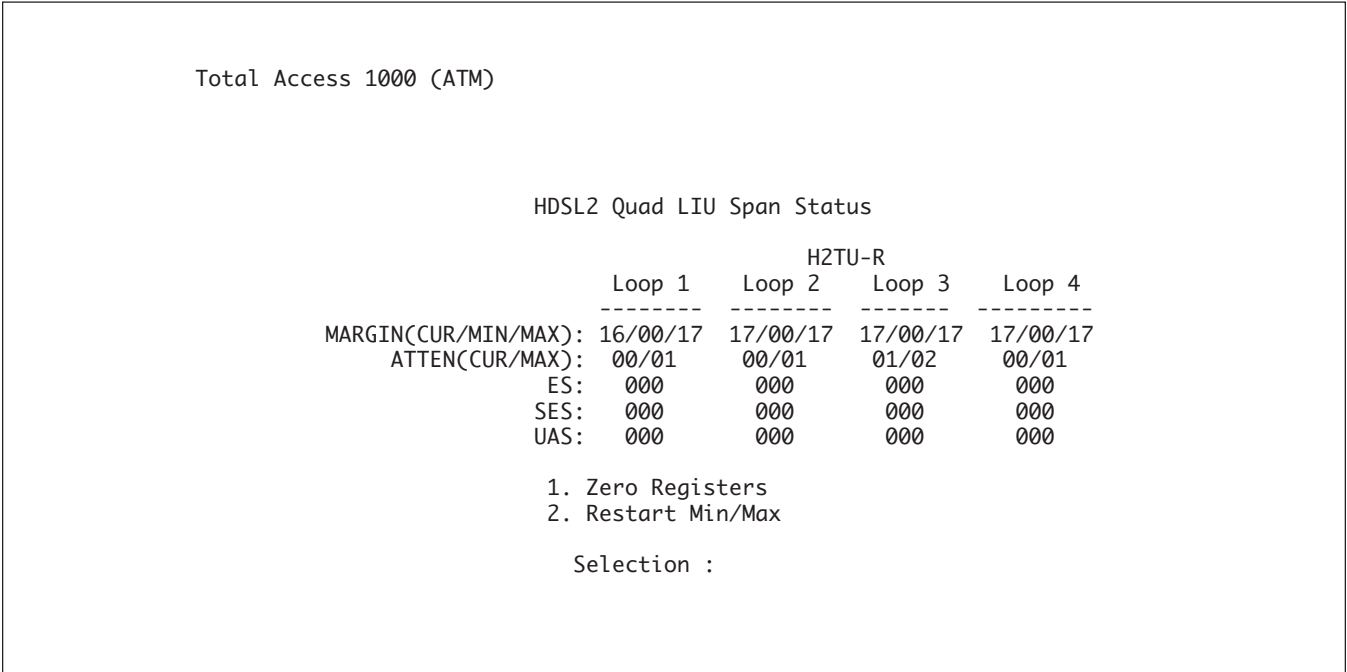
Figure 17. Present Performance Monitoring Statistics Screen for All IMA Links

The LIU Configuration Menu allows the user to view general information about the unit including unit name, part number, CLEI code, and revision numbers. The LIU Configuration menu is a read-only menu that is only updated when new software revisions are installed.

The LIU Provisioning Menu allows the user to view and make changes to options concerning each HDSL2 port. The LIU Provisioning Menu provides an NIU Loopback sub-menu, a Loopback Timeout sub-menu, and a Framing Mode sub-menu. The NIU Loopback sub-menu allows the user to enable or disable each loop's response to loopback codes. The first screen that is shown is for Loop 1. Other Loops may be accessed by using N for next and P for the previous Loop. When NIU Loopback is Enabled, the unit will accept and act upon loopback codes sent from the network. When NIU Loopback is Disabled, loopback codes are ignored. The Loopback Time Out submenu allows the user to set a Loopback Time Out for each port. The Loopback Time Out may be set to None, 20 Minutes, 60 Minutes, or 120 Minutes and dictates the maximum time that a circuit may remain in the loopback condition. The Framing Mode submenu allows the user to choose between SuperFrame (SF) and Extended SuperFrame (ESF) framing for each HDSL2 Port.

The LIU Span Status Menu provides the user to with statistics vital to successful operation of the Total Access 1000 DAT. This menu provides signal quality statistics in terms of Margin (current/minimum/maximum) for each HDSL2 loop. Attenuation (current/maximum), Errored Seconds (ES), Severely Errored Seconds (SES), and Unavailable Seconds (UAS) for the last 15-minute interval are also revealed on the LIU Span Status screen. An example of the LIU Span Status screen is shown in **Figure 18**.

The LIU Test Menu allows the user to invoke a Network Loopback for each individual port or a Backplane Loopback, which puts a Line Loopback on all ports at once.

```
          Total Access 1000 (ATM)




                          HDSL2 Quad LIU Span Status

                                        H2TU-R
                            Loop 1    Loop 2    Loop 3    Loop 4
                            --------  --------  -------   ---------
      MARGIN(CUR/MIN/MAX): 16/00/17  17/00/17  17/00/17  17/00/17
          ATTEN(CUR/MAX):  00/01     00/01     01/02     00/01
                      ES:  000       000       000       000
                     SES:  000       000       000       000
                     UAS:  000       000       000       000

                    1. Zero Registers
                    2. Restart Min/Max

                       Selection :
```

Figure 18. LIU Span Status Screen

The LIU Performance Menu provides the user with present PM statistics (within the last 15 minutes), as well as PM statistics for the previous 24 hours. Statistics may be viewed in 15-minute intervals (previous three hours) or in daily intervals (one 24-hr period). An example of the LIU Performance Monitoring screen is shown in **Figure 19**.

The LIU Code Upload Menu allows the user to upgrade the software for the H2LIU. New software may be uploaded using the Craft interface or Telnet connection with Y-modem protocol.

Access Modules
The Access Modules Menu is the gateway to each of the installed access modules in the Total Access 1000 DAT. Currently, ADTRAN offers the Quad ADSL plus POTS Access Module, but is in the process of developing a single wide Quad ADSL Access Module and a single wide Quad SHDSL Access Module. Documentation concerning provisioning of existing access modules is contained in the following subsections.
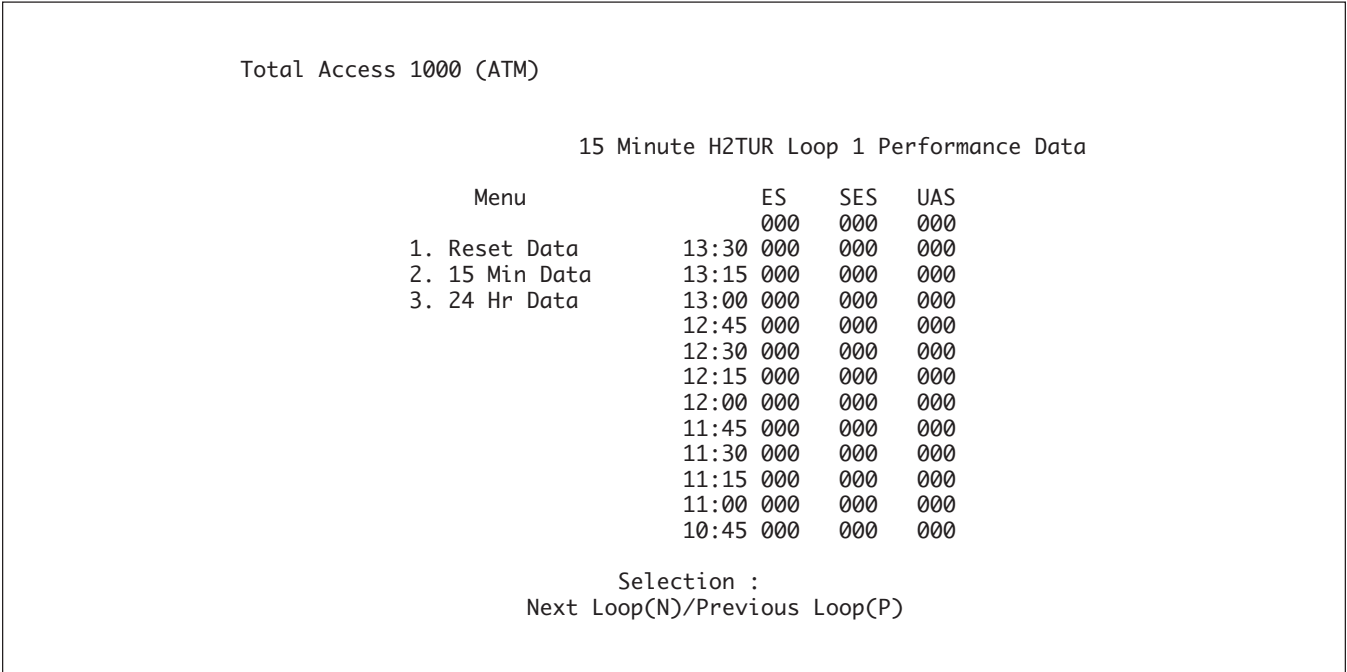
Quad ADSL Access Module
All Access Modules are accessed by logging onto the Total Access 1000 DAT and selecting the option corresponding to Access Modules, then selecting the

option corresponding to the appropriate Access Module. The Quad ADSL plus POTS Access Module provides the following menus:
- Configuration
- Provisioning
- Status
- Alarms
- Performance
- ATM Loopback

The ADSL Configuration Menu allows the user to view general information about the unit including unit name, part number, CLEI code, and revision numbers. The ADSL Configuration menu is a read-only display that is only updated when new software revisions are installed.

The ADSL Provisioning Menu provides the three submenus and an option to reset the module to the factory default settings. The Line Provisioning sub-menu provides access to each of the four ADSL ports on the module. Each ADSL port is provisioned separately to accommodate various CPE. Options available four each port include Line Service State, Rate Mode, Data Path Selection, Target Margin, Minimum Transmit Rate, Minimum Receive Rate, and Maximum Interleave Delay. These options should be

```
          Total Access 1000 (ATM)


                          15 Minute H2TUR Loop 1 Performance Data

               Menu                      ES    SES   UAS
                                         000   000   000
          1. Reset Data         13:30 000   000   000
          2. 15 Min Data        13:15 000   000   000
          3. 24 Hr Data         13:00 000   000   000
                                12:45 000   000   000
                                12:30 000   000   000
                                12:15 000   000   000
                                12:00 000   000   000
                                11:45 000   000   000
                                11:30 000   000   000
                                11:15 000   000   000
                                11:00 000   000   000
                                10:45 000   000   000

                          Selection :
                   Next Loop(N)/Previous Loop(P)
```

Figure 19. LIU Performance Monitoring Statistics

provisioned to match the CPE that is used at the corresponding customer premises. The Flash Upload sub-menu allows the user to perform a software update using Y-modem protocol. The Card Service State sub-menu allows the user to select between In Service, Out of Service – Maintenance (OOS-M), and Out of Service – Unassigned (OOS-U). The In Service state provides full operation of the ADSL circuit. The OOS-M service state allows the flow of ADSL traffic, but does not provide alarms to the network. The OOS-U service state restricts all traffic flow for the individual ADSL port. The Reset to Factory Defaults option resets all of the provisioning options for the ADSL Access Module to the default settings.

The ADSL Status Menu provides status information for each ADSL port. Three sub-menus, including ADSL Status, Circuit Overview, and Service State Status, provide access to various status information. The ADSL Status menu, shown in **Figure 20**, provides detailed information about each individual port.

```
        Total Access 1000 (ATM)



                                    ADSL Status

          ADSL Line                 1               2           3           4
          Link Status               Up              Down        Down        Down
          Downstream Rate           8000 Kbps
          Upstream Rate              992 Kbps
          Downstream Margin          6.5 dB
          Upstream Margin            6.0 dB
          Downstream Power          19.5 dB
          Upstream Power            11.9 dB
          Downstream Attenuation    14.5 dB
          Upstream Attenuation      16.0 dB
          Max Downstream Rate       8128 Kbps
          Max Upstream Rate          992 Kbps
          Downstream Actual Delay    0 ms
          Upstream Actual Delay      0 ms
```

Figure 20. Quad ADSL Status Menu

The Circuit Overview screen, shown in **Figure 21**, provides a graphic representation of the status of each ADSL port. The Service State Status shows the service state of the ADSL module and each individual port.

The ADSL Alarms Menu allows a user to view the alarm status of each ADSL port, as well as, provision thresholds for certain alarm conditions. Each ADSL port has an upstream and downstream profile for which thresholds can be set.

The ATM Loopback Menu is currently disabled.

System Alarms
The System Alarms Menu provides real-time information concerning both acknowledged and unacknowledged alarms for the Total Access 1000 DAT. Each alarm is displayed with a date and time stamp, the Level of the alarm (Critical, Major, Minor, Alert, or Info), and an Event Description. Alarms may be cleared at any time by choosing the Clear Alarm Log option from the System Alarms Menu. Using this option clears both acknowledged and unacknowledged alarms.

Configuration Prompt
The Configuration Prompt option on the Main Menu provides access to command line driven provisioning of the Total Access 1000 DAT. The Configuration Prompt may be used to download provisioning scripts so that no manual provisioning is needed. The Configuration Prompt also allows the user to save a configuration to another storage device for quick restoration in the event of a loss of provisioning. Instructions for using the Configuration Prompt are provided upon selecting the Configuration Prompt option from the Main Menu.

Contact Information
The Contact Information Menu provides contact information for ADTRAN Technical Support and Repair/CAPS, as well as, website addresses for online support and firmware upgrades. This screen is read-only.

Logoff Option
Only one user may provision the Total Access 1000 DAT at a time; therefore, it is important to logoff when finished provisioning so that the system may be accessed remotely. There is an option to set a logoff timeout so that a user that is logged on is automatically logged off after a certain period of non-active time. This option may be found by accessing the Bank Controller Unit, selecting System Management, followed by Password Control.

```
    Total Access 1000 (ATM)



                          Circuit Overview

                     __                    __                __
                    |  |                  _____            |  |
     Down: 8000 Kbps |  |   In Sync      |      |   Down    |  | Down:
     Up:    992 Kbps |1 |------------|  Quad |------------|2 | Up:
                    |  |              | ADSL |            |  |
                    |__|              |      |            |__|
                     __               |      |             __
                    |  |              |      |            |  |
     Down:          |  |   Down       |      |            |  | Down:
     Up:            |3 |------------|      |------------|4 | Up:
                    |  |              |_____|            |  |
                    |__|                                  |__|
```
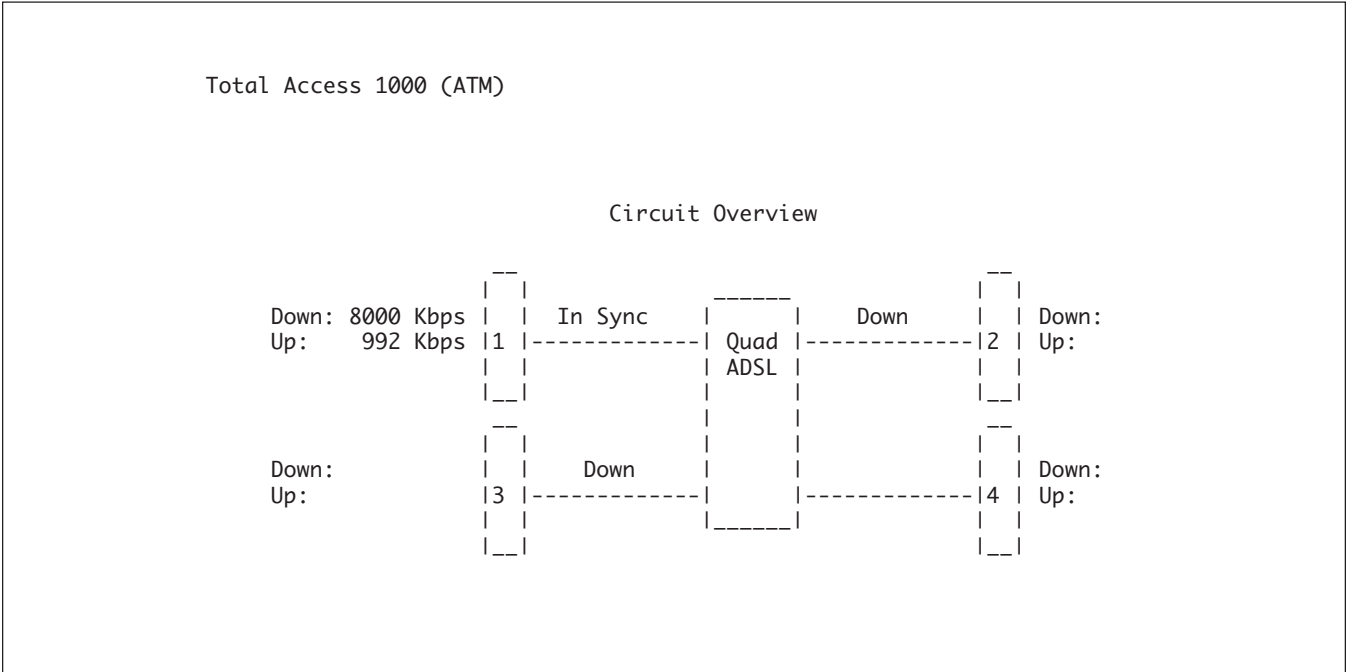
Figure 21. Quad ADSL Circuit Overview Screen

4. TESTING

H2LIU

The Total Access 1000 DAT H2LIU provides diagnostic, loopback, and signal monitoring capabilities.

H2LIU Network Loopback

A Network Loopback can be initiated by a command from the Test Menu, or sending loopback codes to the H2LIU. The loopback position is a logic loopback located within the H2LIU internal HDSL2 transceiver. See **Figure 22**.
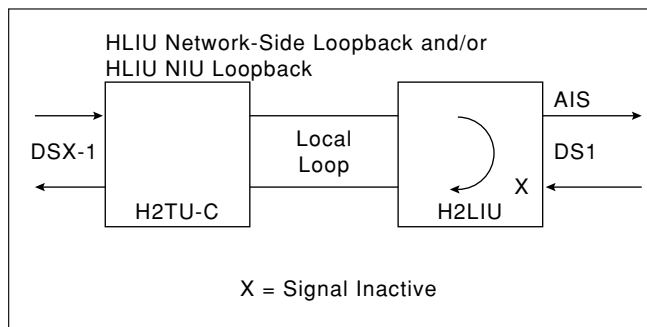
Figure 22. H2LIU Network Loopback

The Total Access 1000 DAT H2LIU will respond to the industry defacto HDSL2 loopback codes as designated in the ANSI document T1E1.4/92. A synopsis of the method described by ANSI is presented in *Appendix A*.

H2LIU Backplane Loopback

The H2LIU Backplane Loopback is a multi-port loopback for the H2LIU circuits. When requested from the H2LIU menus, the module places all four H2LIU ports in a loopback state.

BCU

The Total Access 1000 DAT ATM BCU provides IMA Diagnostic Testing consisting of Receive DRAM Testing and Transmit DRAM Testing.

Self-Test

All modules perform a self-test when inserted into an active Total Access 1000 DAT. The self-test checks internal circuitry. If a module fails the self-test, that module's LEDs will indicate the condition. See Table 3 through Table 5 for details on LED indications.

5. HDSL2 DEPLOYMENT GUIDELINES

The ADTRAN HDSL2 system is designed to provide DS1 based services over loops designed to comply with carrier service area (CSA) guidelines. CSA deployment guidelines are given below:

1. All loops are nonloaded only.

2. For loops with 26-AWG cable, the maximum loop length including bridged tap lengths is 9 kft.

3. For loops with 24-AWG cable, the maximum loop length including bridged tap lengths is 12 kft.

4. Any single bridged tap is limited to 2 kft.

5. Total bridged tap length is limited to 2.5 kft.

6. The total length of multigauge cable containing 26-AWG cable must not exceed the following:

$$12 - \{(3*L_{26}) / (9 - L_{BTAP})\} \text{ (in kft)}$$

L_{26} = Total length of 26-AWG cable excluding bridged taps (in kft)

L_{BTAP} = Total length of all bridged taps (in kft)

This deployment criteria is summarized in the chart shown in **Figure 23**.
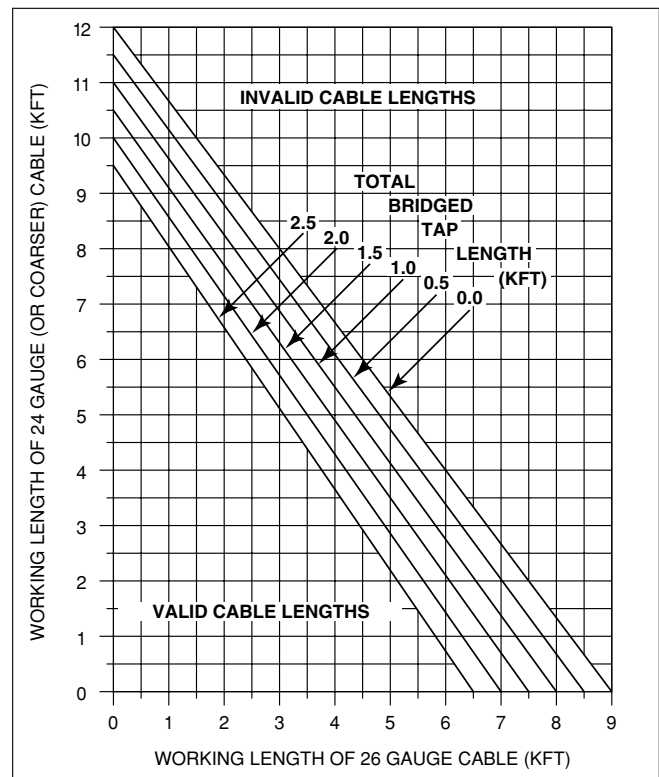
Figure 23. HDSL2 Deployment Guidelines

Loop loss per kft for other wire is summarized in **Table 6**. Recommended maximum local loop loss information for PIC cable at 70ºF, 135 Ω resistive termination is provided in **Table 7**.

NOTE

These approximations are to be used as guidelines only and may vary slightly on different loops. Adhering to the guidelines should produce performance in excess of 10-7 BER.

Table 6. HDSL2 Loss Values
(200 kHz cable loss in dB/kft at 135 Ω)

Cable Gauge	Cable Type	Temperature (ºF) 68°	90°	120°
26	PIC	3.902	4.051	4.253
26	Pulp	4.030	4.179	4.381
24	PIC	2.863	2.957	3.083
24	Pulp	3.159	3.257	3.391
22	PIC	2.198	2.255	2.333
22	Pulp	2.483	2.545	2.629
19	PIC	1.551	1.587	1.634
19	Pulp	1.817	1.856	1.909

Table 7. Loop Insertion Loss Data

Frequency (Hz)	Maximum Loss (dB)
3,000	12.0
10,000	15.0
50,000	25.5
100,000	30.0
150,000	32.75
200,000	35.25
250,000	37.50
325,000	42.00

6. SPECIFICATIONS

The specifications for the Total Access 1000 DAT can be found in **Table 8**.

Table 8. Total Access 1000 DAT Specifications

Environmental	
Operating temperature	-40ºC to +65ºC
Storage temperature	-40ºC to +85ºC
Relative Humidity	Up to 95 percent maximum, noncondensing
Physical	
Dimensions	12.7 in. W x 14.7 in. H x 5.5 in. D

7. MAINTENANCE

The Total Access 1000 DAT does not require maintenance for normal operation.

ADTRAN does not recommend that repairs be attempted in the field. Repair services are obtained by returning the defective unit to ADTRAN Customer Service.

8. WARRANTY AND CUSTOMER SERVICE

ADTRAN will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found at www.adtran.com/warranty.

U.S. and Canada customers can also receive a copy of the warranty via ADTRAN's toll-free faxback server, 877-457-5007.

- Carrier Networks Warranty - Document 414
- Enterprise Networks Warranty - Document 901

Contact Customer and Product Service (CAPS) prior to returning equipment to ADTRAN.

Refer to the following subsections for service, CAPS requests, or further information.

ADTRAN Sales
Pricing/Availability
(800) 827-0807

ADTRAN Technical Support
Pre-sales Applications/Post-sales Technical Assistance
(800) 726-8663

Standard hours: Monday - Friday, 7 a.m. - 7 p.m. CST
Emergency hours: 7 days/week, 24 hours/day

ADTRAN Repair/CAPS
Return for Repair/Upgrade
(256) 963-8722

Repair and Return Address
ADTRAN, Inc.
CAPS Department
901 Explorer Boulevard
Huntsville, Alabama 35806-2807

Appendix A
Quick Start Guide – ADSL plus POTS

WARNING

Risk of electric shock. Voltages up to 190 VDC may be present on telecommunications circuit. Always ensure that the frame ground is connected to the lug inside the OSP housing.

Required Clearances

A minimum 18 inches of clearance is required in front of the chassis to allow for opening of the enclosure door.

Mounting Brackets

The Total Access 1000 DAT enclosure contains brackets that support wall, pole, or pedestal mounting.

Tools Needed (Wall Mount or Polemount)

The Total Access 1000 DAT Chassis mounts and connects with standard fasteners and hand tools:

- Six #6 x 3/4-inch, flat-head wood screws.
- Drill and drill bit set.
- Flat-head screwdriver (medium).
- Two Phillips-head screw drivers (small /medium)
- Selected punch-down block and tool.
- Mounting template (included).

INSTALLATION

After unpacking the unit, inspect it for damage. If damage is noted, file a claim with the carrier, then contact ADTRAN. See *Warranty and Customer Service*.

1. Mount the Enclosure

Install the enclosure as follows:

- Position the mounting template at the desired location, observe required clearances.
- Ensure the mounting template is plumb then mark through the template holes to identify where the pilot holes will be drilled.
- Using a 1/16-inch bit, drill pilot holes at the marked locations.
- Mount the chassis using the six #6 by 3/4-inch flat-head wood screws.

2. Make the HDSL2 Connections

Connect three or four HDSL2 pairs to the Total Access 1000 DAT as follows:

- Locate the gel filled connectors beneath the modules (there are five of these).
- Use Figure 4 to determine which connectors are for which loop.
- Locate the two empty holes, labeled T and R, at the base of one of the connectors.
- Using a large flat-head screwdriver, loosen the bolt at the top of the connector.
- Insert one wire of the HDSL2 pair into the hole labeled T and one into the hole labeled R. Make sure that the wires are all the way in.
- Tighten the bolt at the top of the connector.
- Repeat the preceding instructions for the remaining HDSL2 pairs.

3. Make the POTS Connections

Connect up to 12 POTS lines from the network using the following instructions:

- Locate the 25 pair termination block on the right side of the Total Access 1000 DAT.
- See Table 2 for pin assignments.
- Using a small flat-head screwdriver, lift the appropriate pair connector.
- Insert the POTS pair, one wire into each hole, then push the pair connector all the way in.
- Repeat these instructions for all additional POTS inputs.

4. Make the Customer Connections (ADSL plus POTS)

Connect up to 12 ADSL plus POTS lines to the customer using the following instructions:

- Locate the 25-pair termination block on the right side of the Total Access 1000 DAT.
- See Table 2 for pin assignments.
- Using a small flat-head screwdriver, lift the appropriate pair connector.
- Insert the pair that is provided to the customer, one wire into each hole, then push the pair connector all the way in.
- Repeat these instructions for all additional customer loops.

UL Deployment Guidelines

- Terminate enclosure to a reliable ground source.
- This unit shall be installed in accordance with the requirements of NEC NFPA 70.

5. Make Ground Connections

- Use Figure 4 to locate the ground bus/connection.
- Connect the ground bus/connector to a reliable ground source using 10 gauge (or greater) copper conductor.

6. Apply Span Power

After the Total Access 1000 DAT's ground bus has been properly connected to a reliable ground source, span power may be applied via the HDSL2 pairs. If the H2LIU and PSU are installed, and three or more spans are providing span power, the LEDs will illuminate to indicate the Total Access 1000 DAT is receiving the proper amount of power.

7. Installing Modules

To install a Total Access 1000 DAT module, grasp the unit by the front panel while supporting the bottom edge. Align the card edges to the guide grooves and insert the unit until the edge connector seats firmly into the backplane. Lock the card in place by pushing in the locking lever in against the front panel of the module.

PROVISIONING THE MODULES

1. Logon to the System

The ADMIN interface (DB-9 connector) on the Total Access 1000 DAT ATM BCU is used to change provisioning options, obtain access module status through menu screens, and initiate tests on circuits. To access the menu screens, connect a VT100 terminal or computer running a terminal emulation program to the craft interface port using a standard male-to-female RS-232, DB-9 cable. Craft port settings are as follows:

- 9600 Baud
- No parity
- 8 Data bits
- 1 Stop bit

CAUTION

The ATM BCU retains provisioning setup when removed from the chassis. If inserted into another chassis, the provisioning setup is invoked on that chassis' access modules.

Windows HyperTerminal

Windows HyperTerminal can be used as a VT100 terminal emulation program. Open HyperTerminal by selecting PROGRAMS / ACCESSORIES / HYPERTERMINAL. Refer to the Help section of HyperTerminal for additional information.

NOTE

To ensure proper display background in Windows HyperTerminal, select VT100 terminal emulation under SETTINGS.

Password

Upon initial connection, press the <Esc> key one time to bring up the prompt for the Account Name. The default Account Names are ADMIN, READWRITE, and READONLY in all capital letters.

NOTE

All Account Names and Passwords are case sensitive. The default Account Names and Passwords should be entered in UPPER CASE.

The factory default Password is PASSWORD in all capital letters for all default Account Names. Each Account Name has a different permission level. ADMIN, by default, is the System Administrator login and allows provisioning of every provisionable option. The READWRITE Account Name corresponds to the Technician login, and restricts the user from making changes to accounts, but allows provisioning of most provisionable options that correspond to services provided by the Total Access 1000 DAT. The READONLY Account Name is just that, an account that allows read-only access to the Total Access 1000 Menus. Each password can be changed to a user-selected password if desired. To prevent a remote user from not being able to access the menus of the Total Access 1000 DAT after a user has accessed the craft port, a timed auto-logout will logout the last user after approximately eight minutes of keyboard inactivity. If this happens during provisioning, simply logon to the system again and continue from the last completed provisioning change.

Option Provisioning

By default, the provisioning options are set in a manner that fits in to most networks with very few changes. The following is a list of options to verify consistency with the upstream devices:

- The Framing Mode of the H2LIU must match the framing mode of the upstream HDSL2 transceiver.
- All IMA facilities on the upstream IMA device must be placed in Group 1.
- Cell Scrambling must be disabled in the upstream IMA device or enabled in the ATM BCU of the Total Access 1000 DAT.
- The upstream IMA Group must be configured with the following settings:
  - IMA Transmit ID   1
  - IMA TX Frame Length   128
  - Min. TX Active Links   1
  - Min. RX Active Links   1
  - Max. Link Diff. Delay   100

  or the ATM BCU of the Total Access 1000 DAT must be changed to match the upstream IMA device. To change any of these options on the ATM BCU, enter the IMA Menu, select

Provisioning, select Shortcut Setup, select Force All Facilities into Unassigned, escape one time, and select IMA Group. Once inside this menu, to make a change in a setting, use the arrow keys to highlight the value to be changed, press the space bar, enter the appropriate value, and press <Enter>. When all the changes are made, return to the main provisioning menu using <Esc>, enter the Shortcut Setup Menu and select Force All Facilities into Group – 1.

- The default options for the ADSL lines are as follows:
  - Line Service State   Out of Service - Maintenance
  - Rate Mode   Adaptive
  - Data Path Selection   Interleave

these options must match the CPE for each port. To change these options, access the Access Modules Menu of the Total Access 1000 DAT, select the appropriate Quad ADSL Module, select Provisioning, select Line Provisioning, select the appropriate line, and edit the options.

At this point, all LEDs on the PSU, H2LIU, and ATM BCU should be green. The LEDs on the ADSL plus POTS access modules should be green if connected to properly provisioned CPE or red if not connected to CPE. If other conditions are present, refer to pages 9 and 10 LED Tables 3 and 4 to aid in trouble islolation.

PVC Provisioning

PVCs or Permanent Virtual Circuits are used to direct ATM traffic from one port to another. Each ADSL port must have at least one PVC assigned to it for it to transmit and receive data from the network. A PVC consists of two end points and two traffic directions. Each traffic direction may be provisioned differently for asymmetrical service. To build PVCs, follow these instructions:

1. Locate and make note of the VPI/VCI combinations that are assigned to the IMA ports in the upstream device. Keep these for later use
2. Logon to the Total Access 1000 DAT
3. Proceed to the Bank Controller Unit Menu
4. Select Circuit Management
5. Select ATM PVC/PVP Management

6. Type <C> for Create PVC. The card selection for endpoint 1 will be highlighted in the bottom left portion of the screen.

7. Press the spacebar repeatedly until the appropriate card name is displayed in the field, then press <Enter>.

8. Use the right arrow to move to the port selection field for endpoint 1.

9. Press the spacebar repeatedly until the appropriate card name is displayed in the field, then press <Enter>.

10. Use the right arrow to move to the VPI selection field for endpoint 1.

11. Press the spacebar once, enter the appropriate value, and then press <Enter>.

12. Use the right arrow to move to the VCI selection field for endpoint 1.

13. Press the spacebar once, enter the appropriate value, and then press <Enter>.

14. Use the right arrow to move to the card selection field for endpoint 2.

15. Repeat steps 7 through 13 for the endpoint 2 values.

16. Use the right arrow to move to the card selection for endpoint 1.

17. Use the up arrow to move to the service class selection field for the PVC.

18. Press the spacebar repeatedly until the appropriate service class appears in the field. The choices are Unspecified Bit Rate (UBR), Constant Bit Rate (CBR), Variable Bit Rate, real time (VBR-rt), and Variable Bit Rate, non-real time (VBR-nrt).

19. If UBR is chosen, skip to Step 25.

20. If CBR, VBR-rt, or VBR-nrt is chosen, continue with the next step.

21. Use the right arrow key to highlight the traffic descriptor fields. When each field is highlighted, a description of the field is displayed at the bottom of the screen.

22. When the field that needs to be changed is highlighted, use the spacebar to access the field.

23. Enter the appropriate value followed by <Enter>.

24. Once all the traffic descriptor fields have been completed, continue with the next step.

25. Use the up arrow to proceed to the Done? field.

26. Use the left arrow to move to the Packet Discard field. Use the spacebar to switch between Enabled or Disabled and use <Enter> to confirm the decision.

27. Use the left arrow to move to the Circuit ID field.

28. Press the spacebar to access the field.

29. Enter the appropriate name for the circuit (do not use spaces).

30. Use the right arrow to move back to the Done? field. Press the spacebar to select Yes, and <Enter> to confirm the selection.

If the VPI/VCI combinations are acceptable, the screen will flash and the newly created PVC will be displayed in the list located in the upper portion of the screen. If the VPI/VCI combinations are unacceptable, a message will be displayed at the bottom of the screen. Use the steps above to edit the values and then choose Yes in the Done? field once the VPI/VCI combinations are correct.

FOLLOW-UP PROCEDURES

This completes the quick start guide for the ADSL plus POTS application. For more information, consult the document to which this Appendix is attached.