



installation guide

ADTRAN[®]

Total Access 1500

Total Reach DDS-DP

Installation and Maintenance Guide

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About this Document

This document provides instructions for the installation and maintenance of the Total Reach DDS-DP. The intended audience for this information is the craftperson responsible for the installation and maintenance of the equipment. These instructions assume familiarity with the intended use of the equipment, basic required installation skills, and knowledge of local and accepted safety practices.

Additionally, this document provides provisioning information specific to the User Interface of the Total Reach DDS-DP. The intended audience for this information is system management personnel responsible for the configuration of the software applications. User Interface provisioning assumes familiarity with the intended use of the equipment, concepts peculiar to this product, and a computer operations skill set.

Related information can be obtained by referring to the applicable Job Aid, and System documentation.



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Revision History

Revision	Date	Description
A	October 2001	Initial release.
B	September 2002	Clarifies testing and installation, and adds option menu screens.
C	June 2010	Correct dip switch function.

Conventions

The following typographical conventions are used in this document:

[This font](#) indicates a cross-reference link.

This font indicates screen menus, fields, and parameters.

THIS FONT indicates keyboard keys (ENTER, ESC, ALT). Keys that are to be pressed simultaneously are shown with a plus sign (ALT+X indicates that the ALT key and X key should be pressed at the same time).

This font indicates references to other documentation and is also used for emphasis.

This font indicates on-screen messages and prompts.

This font indicates text to be typed exactly as shown.

This font indicates silk-screen labels or other system label items.

This font is used for strong emphasis.

Hazard Classifications

The following hazard classifications are used in this document:



DANGER

DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



WARNING

WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



CAUTION

CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury. CAUTION can also be used to alert against unsafe practices associated with events that could lead to personal injury.

NOTICE

Notice call-outs indicate a potentially hazardous situation not related to personal injury, such as messages related to property damage only.

NOTE

Notes inform the user of additional, but essential, information or features.

Metric Conversion

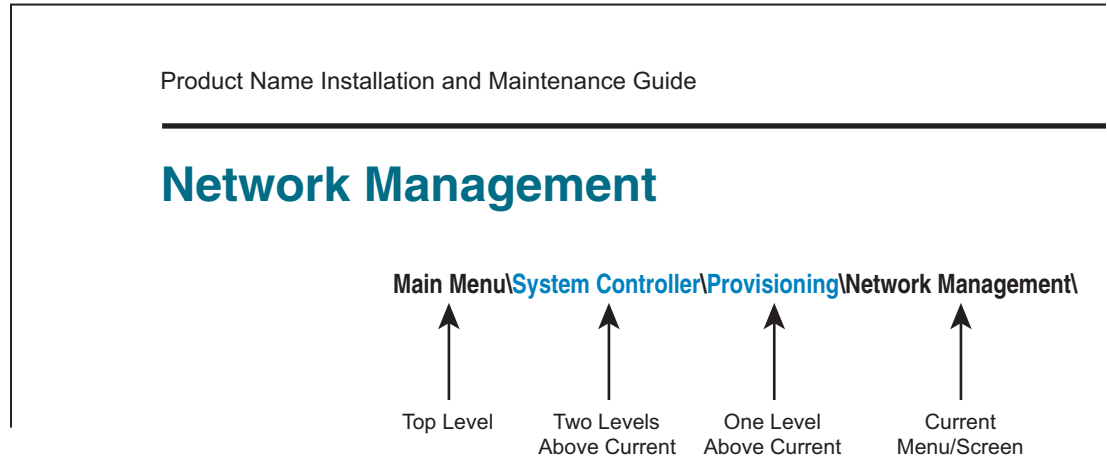
The Total Access 1500 is designed to fit standard 19-inch and 23-inch racks, occupying 2U of vertical space. 1U equals 1 rack unit of vertical height, which equals 1.75 inches or 44.5 millimeters. The following metric conversions apply:

- Height: 3.125 inches = 79.375 millimeters
- Width: 0.62 inches = 15.748 millimeters
- 2U (3.5 inches) = 89 millimeters

How to Navigate this Document

Menus found at the same level in the User Interface appear at the same heading level in this document, with the sub-menus arranged to follow sequentially at lower heading levels.

To assist in navigation, a Path Heading appears below each topic heading in these sections, displaying the menu path to that feature. For example:



NOTE

When viewing this document in PDF form, the headings shown in **blue** are links to the higher menu levels.

Icons

The following icons are used throughout the ADTRAN document suite:

-  jobAid
-  installation guide
-  deployment guide
-  application guide
-  reference guide
-  diagnostic guide
-  safety and regulatory
-  engineering guide
-  release notes
-  upgrade guide
-  user guide

Training

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For inquiries concerning training, contact ADTRAN:

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Total Access 1500

Total Reach DDS-DP

Scope of this Guide

This document provides instructions for the installation and maintenance of the Total Access 1500 Total Reach DDS-DP.

Furthermore, this guide provides provisioning defaults, User Interface fundamentals, and descriptions of the Total Access 1500 Total Reach DDS-DP menus.

This guide contains the topics listed in [Table 1](#).

Table 1. Topic List

Topic	See Page
Introduction	2
Safety and Regulatory Compliance	3
Installation	4
Provisioning	6
General Keyboard Commands	14
Main Menu	16
Maintenance	24
Specifications	25

Related Documentation

Refer to [Table 2](#) for additional, detailed information concerning the Total Access 1500 Total Reach DDS-DP.

Table 2. Related Documentation

Title	Part Number
Total Access 1500 Component-level Documentation	
<i>Total Access 1500 Total Reach DDS-DP Job Aid</i>	61180105L1-22
Total Access 1500 System-level Documentation	
<i>Total Access 1500 System Manual</i>	61180105L1-1

Introduction

This practice provides installation and maintenance procedures for the ADTRAN Total Access 1500 Total Reach DDS-DP (TR DDS-DP). The figure on the left, illustrates the front panel of the TR DDS-DP (P/N 61180105L1).



Description

The TR DDS-DP delivers data at rates up to 64 kbps using a single copper pair. Used in combination with the Total Reach DDS-R termination unit, the Total Reach DDS-DP can accommodate extended loop lengths, eliminating the need for DDS repeaters.

- The TR DDS-DP span powers the remote DDS-R located at the customer premises.
- The DDS-R converts the 2-wire signal to the traditional 4-wire Alternate Mark Inversion (AMI) signal for presentation to the customer.

The TR DDS-DP occupies a single channel position in the Total Access 1500 chassis. It provides the interface between a DS0 time slot of the T-carrier data stream and the 2-wire metallic loop extending to the customer premises. The TR DDS-DP will interoperate over the carrier system with another TR DDS-DP, OCU DP, DS0 DP, 1/0 DCS, or switch and can be located in an end office, hub office, intermediate office, or Digital Loop Carrier (see [Figure 1](#)). The 2-wire loop is connected using the Tip (pin 15) and the Ring (pin 35) on the Total Access 1500 backplane.

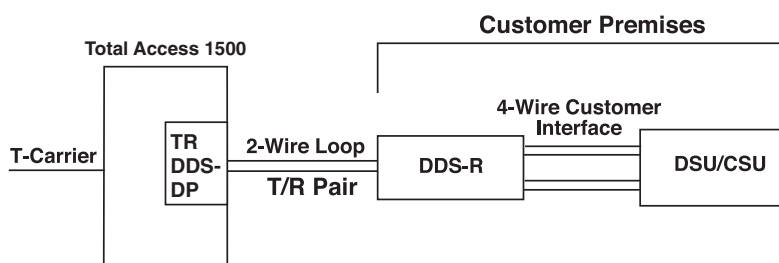


Figure 1. Total Reach DDS-DP Circuit Diagram

Features

- All standard rates to 56 kbps with or without secondary channel
- 64 kbps clear channel
- 2-wire deployment
- Repeaterless operation
- Bridged tap tolerant
- Span power for remote DDS-R termination unit
- Utilization in all Total Access 1500 remote terminal applications
- Logic level test access; nonintrusive receive monitoring capability
- Loop Quality Monitor and A/B signaling options
- Embedded Digital System 6 capabilities for remote provisioning, configuration, and performance monitoring
- Provisioning via DB-9 craft interface on Total Access 1500 System Controller Unit (SCU).
- Bidirectional loopback during local DS0 latching loopback

- Protected loopback eliminates false latching loopback occurrences
- Supports DDS latching loopback standard T1E1.2/99-007R1

Safety and Regulatory Compliance



CAUTION



CAUTION!
 SUBJECT TO ELECTROSTATIC DAMAGE
 OR DECREASE IN RELIABILITY.
 HANDLING PRECAUTIONS REQUIRED.

Electrostatic Discharge (ESD) can damage electronic modules. When handling modules, wear an antistatic discharge wrist strap to prevent damage to electronic components. Place modules in antistatic packing material when transporting or storing. When working on modules, always place them on an approved antistatic mat that is electrically grounded.

Table 3 shows the configuration codes for the TR DDS-DP. The TR DDS-DP is NRTL listed to the applicable UL standards. The TR DDS-DP is to be installed in a restricted access location only.

Table 3. Configuration Codes

Configuration Code	Input	Output
Power Code (PC)	F	C
Telecommunication Code (TC)	–	X
Installation Code (IC)	A	–

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
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.

Installation

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

Shipping Contents

The contents include the following items:

- Total Reach DDS-DP
- *Total Access 1500 Total Reach DDS-DP Job Aid* (P/N 61180105L1-22)

Instructions for Installing the Module

The TR DDS-DP plugs directly into a Total Access 1500 shelf. No special wiring is required. The 2-wire loop uses the T/R (Tip and Ring) pair, pins 15 and 35, of the Total Access 1500 backplane.

Remote Unit Span Power

The TR DDS-DP span powers the remote unit by providing -130 VDC measured from Tip to Ring. Voltage measured from Tip to GND should be -130 VDC or less depending on voltmeter impedance. Voltage from Ring to GND should indicate approximately 0 V.

Front Panel LEDs

The TR DDS-DP provides front panel LEDs to display status information. The TR DDS-DP LEDs and status descriptions are shown in [Table 4](#).

Table 4. Front Panel LEDs

LED	Condition	Description
STATUS	○ Off	No power or malfunction
	● Green	Normal synchronized operating condition
	* Yellow Flashing	Loopback active at remote unit
	● Yellow	Loopback active at DDS-DP
	● Red	Indicates one of the three conditions: <ol style="list-style-type: none"> 1. Loss of sealing current 2. Loss of, or no synchronization 3. Poor signal quality when QM enabled (SW1-5 ON)
	* Flashing Red	CRC errors near or far
REM	○ Off	No power or malfunction
	● Green	Remote provisioning in effect
	* Flashing Green	DS-6 control link established

Synchronization

The TR DDS-DP and DDS-R typically require 30 to 90 seconds to synchronize. Once synchronized, the Status LED will turn ON green. If synchronization cannot be achieved, check the T/R pair for open-circuit or short-circuit conditions or load coils.

Connections

All connections are made through the 50-pin Amphenol connector on the backplane of the Total Access 1500. See [Table 5](#).

Table 5. Total Reach Pair Location for Total Access 1500

Total Access 1500 Slot	Port 1 T/R (P1)	Total Access 1500 Slot	Port 1 T/R (P1)
1	26 /1	13	38 / 13
2	27 /2	14	39 / 14
3	28 /3	15	40 / 15
4	29 /4	16	41 / 16
5	30 /5	17	42 / 17
6	31 /6	18	43 / 18
7	32 /7	19	44 / 19
8	33 /8	20	45 / 20
9	34 /9	21	46 / 21
10	35 / 10	22	47 / 22
11	36 / 11	23	48 / 23
12	37 / 12	24	49 / 24

Provisioning

On initial installation, the TR DDS-DP is provisioned according to the factory default settings.

False Loopback Immunity

ADTRAN's Protected Loopback family of channel units includes an algorithm compatible with SARTS, Hekimian, TPI, and other test systems that virtually eliminate false latching loopbacks. Immunity is automatically enabled at 64 kbps.

In addition, ADTRAN's Protected Loopback family features a protected loopback mode for further false latching loopback protection.

Latching Loopback

Latching loopbacks are always enabled except when temporarily disabled via the protect loopback features. When 64 kbps is enabled, placing **SW1-3 (PLB)** to OFF will permit the TR DDS-DP to respond to the legacy latching loopback sequence as described in TR62310 and ANSI T1.107. At 64 kbps, placing **SW1-3** to ON, the TR DDS-DP will enable ADTRAN's Protected Loopback mode.

Control Protocol

Remote access to provisioning and status information is accomplished using either ADTRAN Digital System 6 Message protocol defined in Control and Diagnostic Procedures Practice, Section 6032991-6, or through the craft interface on the Total Access 1500 SCU. Digital System 6 is supported by the TPI 108/109 and 105 portable test sets and is supported by Hekimian React 2001 Revision 1900 remote test system.

The TR DDS-DP network elements comply with ANSI T1.107-1995, "Digital Hierarchy Format Specifications Annex G" which allows remote provisioning, querying, and performance monitoring via in-band control of network elements.

NOTE

The REACT 2001 GUI software Release 1.900 supports ANSI T1.107-1995.

Remote access is accomplished using a defined set of in-band DS0 byte sequences similar to the latching loopback sequence. Commands issued via the test system are recognized by the individual channel unit which responds with the appropriate byte sequences. These in-band commands can be used to verify options via dialogs with REACT 2001, TPI 108/109 and TPI 105 test sets. Unit CLEI, serial number, provisioning, and performance information can be retrieved remotely using the Digital System 6 protocol.

Provisioning and Status DS6

All configuration options can be remotely viewed or provisioned via DS6. The front panel remote (**REM**) LED indicator flashes during DS6 control link establishment and remains ON after the channel unit has been remotely provisioned. The newest provisioning will overwrite any existing provisioning contained on the TR DDS-DP.

Time Slot Assignment

The Total Access 1500 platform can have multiple time slots in the T1 data stream assigned to each physical slot in the channel bank. The Total Access 1500 allows craft selectable time slots using the electronic provisioning interface.

AP-Switch

If the channel unit has been remotely provisioned, the operator can alternate between remote configuration and manual switch settings by pressing the momentary Alternate Provisioning (**AP**) switch located on the front panel. If the channel unit is removed from the system, the Total Access 1500 bank slot retains the last remote provisioning information. A similar TR DDS-DP placed in that slot will assume the same remote provisioning.

REM Indicator

The **REM** indicator remains ON when the channel unit is operating based on remote provisioning, and is OFF when operating on manual switches. If the channel unit has never been remotely provisioned, the **AP** switch has no effect and the **REM** indicator remains OFF. See [Table 4](#) on page 5 for LED indication.

Out-of-Band Diagnostics

In addition to in-band access to TR DDS-DP performance diagnostics and provisioning via Digital System 6, access is also available out-of-band (non-intrusively) via the craft interface located on the Total Reach DDS-R.

The TR DDS-DP displays provisioning information, Total Reach system status, performance monitoring information stored in 15-minute and 24-hour registers for both the Total Reach DDS-DP and Total Reach DDS-R, and an event log which time stamps system performance anomalies and threshold violations.

Physical access to the terminal interface on the Total Reach DDS-R is made by a serial interface connection to a dumb terminal or dumb terminal emulation. Provisioning of the TR DDS-DP may be viewed but not changed from the terminal interface on the Total Reach DDS-R.

Further information about the Total Reach terminal interface and performance monitoring may be found in the *Total Reach OCU-R Frame IQ with Craft Interface All Rate DDS Termination Unit Installation and Maintenance Practice* P/N 61291023L2-5.

Options

Select the appropriate Option and Rate using circuit board switches **SW1** and **SW4** as illustrated in [Figure 2](#). Select options prior to board insertion.

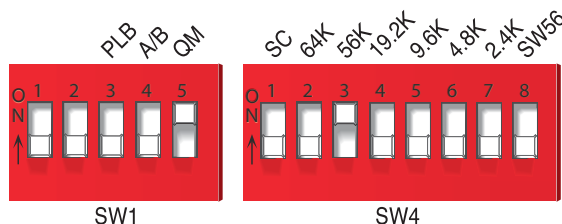


Figure 2. Option and Rate Selection Switches

Protected Loopback (PLB)

ADTRAN's Protected Loopback supports the new proposed DDS latching loopback standard in T1E1.2/99-007R1. When Protected Loopback is enabled, the TR DDS-DP will respond to latching loopback when the idle code preamble is sent prior to the latching loopback sequence specified in TR62310 and ANSI T1.107.

Protected Loopback prevents false latching loopbacks when the loopback sequence is embedded in customer payload data. Test equipment should support T1E1.2/99-007R1 to perform testing at 64 kbps when protected loopback is enabled.

See [Table 6](#) for the latching loopback sequence requirement when Protected Loopback is enabled.

Table 6. Protected Loopback Mode Requirement

Sequence Function	Byte Code	# of Received Bytes
Exit Data Protocol	Idle - 11111110	Minimum of 35 Idle bytes
Clear existing loopbacks	Transition in progress (TIP) X0111010	Minimum of 35 TIP bytes
Identify device to be looped	Loopback select code (LSC) X0000101 - DS0 X1010101 - OCU X0110001 - CSU X1000001 - NIE	Minimum of 35 LSC bytes
Prepare to loop; send MAP code after 30 bytes	Loopback enabled (LBE) X1010110	Minimum of 100 LBE bytes
Activate loopback	Far-End voice (FEV) X1011010	Minimum of 32 FEV bytes

NOTE

A minimum of 35 TIP bytes is required to disable established latching loopback. X = Don't Care bit.

A/B Signaling (A/B)

When A/B Signaling (**SW1-4**) is OFF, the unit derives signaling from the incoming data stream. When A/B Signaling is ON, the unit determines the state of the A and B Signaling bits using signals present on the backplane of the channel bank. This method assumes that proper signaling has been maintained throughout network tandems and cross connect systems.

NOTE

A/B Signaling option is only applicable when SW56 is selected; otherwise it is a "don't care."

Quality Monitor (QM)

When Quality Monitor (**SW1-5**) is ON, the TR DDS-DP monitors the incoming 2-wireloop and 4-wire customer interface data for errors. If excessive errors are detected, the unit blocks the customer's data transmission and transmits an alternating MOS (9Ah)/ASC (9Eh) trouble code to the network. Customer data transmission is automatically restored when the trouble condition is cleared.

Rate Selection

Select rate with dip switch (**SW4**) by positioning the selected switch toward the inscribed rate.

NOTE

Select only one rate. More than one, or none, defaults to 56 kbps without secondary channel.

NOTE

If either SW56 or 64 kbps is selected, the secondary channel (SC) switch should not be selected.

Testing

The TR DDS-DP is equipped with logic level bantam test access jacks that permit testing in both directions using a portable test set. Latching DS0 and CSU loopback sequences and alternating CSU loopback sequences are supported.

Alternating loopbacks do not operate when the 64 kbps data rate is selected. Choose NEAR to test toward the customer loop; choose FAR to test toward the T-carrier. In the FAR direction, a DS0 loopback sequence will loop the unit directly across the T-carrier system. In the NEAR direction, a DS0 loopback sequence will loop the unit directly connected to the portable test set.

NOTE

If 64 kbps is selected, the unit will only respond to latching loopback sequences. Alternating sequences are not valid at this rate.

TR DDS-DP Trouble Code

The TR DDS-DP system provides a quick diagnosis in the case of a circuit condition where continuity is broken. The trouble code type received by a tester determines whether the open condition is occurring on the local loop or at the customer premises. In the event of a 2-wire DSL loss of signal, loss of sync, or an open condition caused by an open conductor or disconnected 2-wire loop, the TR DDS-DP transmits an alternating MOS (9Ah)/ASC (9Eh) trouble code into the network as shown in Figure 3. During a similar Out-of-Service condition at the customer premises, the Total Reach OCU-R transmits an ASC (9Eh) upstream into the network

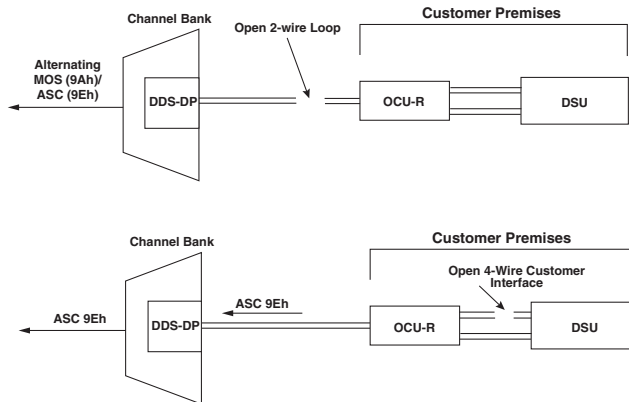


Figure 3. DDS Trouble Codes

TR DDS-DP Bidirectional Loopback Support

The TR DDS-DP will execute a bidirectional loopback when performing a DS0 loopback at the TR DDS-DP as shown in Figure 4. During a bidirectional loopback the DDS-R enables test data to pass through the 4-wire interface to the customer site. This allows a standard portable test set at the customer site to verify the integrity of both the 4-wire and 2-wire loops by transmitting a test pattern to the TR DDS-DP and examining the returning data for synchronization and errors.

A bidirectional loopback and pass-through is shown in Figure 5. During a bidirectional loopback initiated at the TR DDS-DP the DDS-R **CUST LBK** LED will flash.

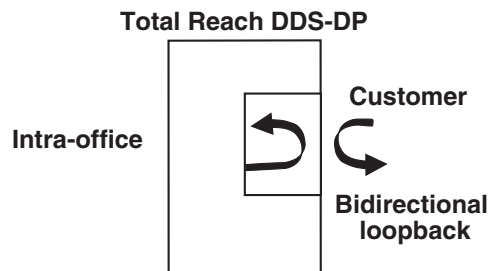


Figure 4. DS0 Loopback at the Total Reach DDS-DP

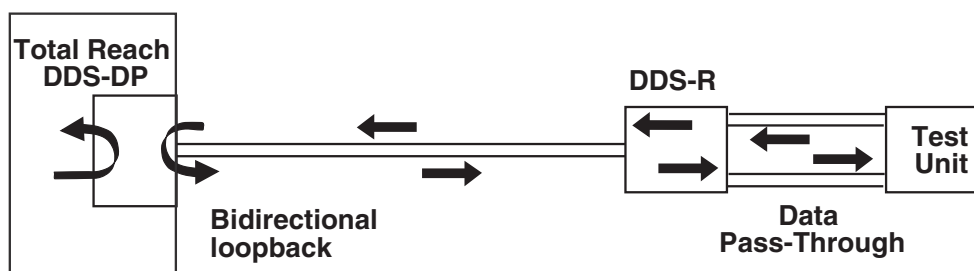


Figure 5. Total Reach DDS-DP Bidirectional Loopback

Loopback Pushbutton (Remote Unit)

The TR DDS-DP initiates a loopback in response to the loopback pushbutton on the remote unit (for example: DDS-R ACE). refer to [Figure 6](#).) When available, the pushbutton will allow a field technician or craft personnel to conduct loop testing from the remote end independent of the test center or CO. Remote unit pushbutton operation and LED indication are discussed in the remote unit documentation. The TR DDS-DP **STATUS** LED will turn ON yellow in response to this loopback.

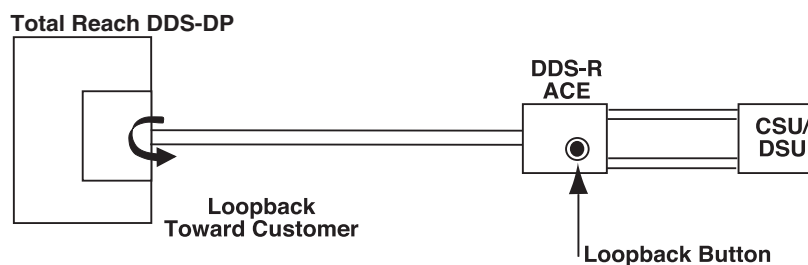


Figure 6. Total Reach DDS-DP Response to DDS-R ACE LBK Button

User Interface

This section provides detailed information on the following:

- [“Menu Structure”](#) on page 14
- [“Menu Navigation”](#) on page 15

Menu Structure

The menu structure for the TR DDS-DP is a layered menu tree. Each layer of the menu tree is displayed as a menu or a screen.

Menus

A menu is a display that provides numbered selections that are used to navigate to related menus, modify provisioning information, or display information screens. A menu can contain the following objects:

- **Menu Option:** A menu option is indicated by a number which, when selected, navigates the display to another menu layer or is used to change the option setting.
- **Read-only Field:** A read-only field displays information that cannot be changed. The information displayed in a read-only field can be static or can be automatically updated by the unit.
- **Read-write Field:** A read-write field displays information that, when selected, can be modified.
- **Hot Key:** A hot key is a key or combination of keys that are assigned to a function. Hot keys are indicated by the required key(s) and a brief description (that is, “?” - Help).

Screen

A screen is a display that usually indicates the end of a menu tree path. A screen can contain the following objects:

- **Read-only Field:** A read-only field displays information that cannot be changed. The information displayed in a read-only field can be static or can be automatically updated by the unit.
- **Read-write Field:** A read-write field displays information that, when selected, can be modified.
- **Hot Key:** A hot key is a key or combination of keys that are assigned to a function. Hot keys are indicated by the required key(s) and a brief description (that is, “?” - Help).

Menu Navigation

Basic menu navigation is accomplished by selecting the desired option number and then pressing ENTER. To return to the previous menu, press the ESC (escape) key. To access the System Help screen, press the question mark (?) key.

General Keyboard Commands

Table 7 shows the general keyboard commands for the TR DDS-DP system.

Table 7. General Keyboard Commands

Keyboard Command	Description
BACKSPACE	This keyboard command deletes the character to left of the cursor during keyboard input.
ENTER (or Return)	This keyboard command terminates input.
CTRL+R (Control and r)	This keyboard command refreshes the display.
CTRL+Z (Control and z)	This keyboard command forces the terminal menu display to the top level.
ESC (Escape)	This keyboard command clears partial input or return to the previous menu.

Remote Provisioning and Diagnostics

TR DDS-DP provides remote access to provisioning and diagnostics via ADTRAN Digital System 6 Message (DS6) protocol. The TR DDS-DP can also be accessed via the craft interfaces on the Total Access 1500 SCU. The following section provides detailed provisioning and diagnostic information.

- Control Protocol
- Provisioning and Status DS6
- Electronic Provisioning

Control Protocol

Remote access to provisioning and status information is accomplished using either ADTRAN Digital System 6 Message protocol defined in *Control and Diagnostic Procedures Practice*, Section 6032991-6, or through the craft interface on the Total Access 1500 SCU. Digital System 6 is supported by the TPI 108/109 and 105 portable test sets and is supported by Hekimian React 2001 Revision 1900 remote test system. The Total Reach DDS network elements comply with ANSI T1.107-1995, "Digital Hierarchy Format Specifications Annex G" which allows remote provisioning, querying, and performance monitoring via in-band control of network elements.

NOTE

The REACT 2001 GUI software Release 1.900 supports ANSI T1.107-1995.

Remote access is accomplished using a defined set of in-band DS0 byte sequences similar to the latching loopback sequence. Commands issued via the test system are recognized by the individual channel unit, which responds with the appropriate byte sequences. These in-band

commands can be used to verify options via dialogs with REACT 2001, TPI 108/109 and TPI 105 test sets. Unit CLEI, serial number, provisioning, and performance information can be retrieved remotely using the Digital System 6 protocol.

Provisioning and Status DS6

All configuration options can be remotely viewed or provisioned via DS6. The front panel remote (**REM**) LED indicator flashes during DS6 control link establishment and remains ON after the channel unit has been remotely provisioned. The newest provisioning will overwrite any existing provisioning contained on the TR DDS-DP.

Electronic Provisioning

The craft interface on the Total Access 1500 SCU may be used to change the default options and obtain access module status through menu screens. To access the menu screens, connect a terminal or a computer running a terminal emulation program to the front panel craft interface ADMIN port using a standard male-to-female RS-232 DB-9 cable. Craft port settings are as follows:

- 9600
- No Parity
- 8 Data Bits
- 1 Stop Bit
- No flow control

Any change in provisioning from the Total Access interface will overwrite all existing remote provisioning information. Once the unit has been remotely provisioned, the TR DDS-DP front panel **REM** LED will illuminate green.

Logging on to the Total Access 1500

To Log on to the Total Access 1500, complete the following steps:

NOTE

Account names and passwords can be provisioned to be case sensitive for additional security. Default accounts are ADMIN, READONLY, READWRITE, and TEST. The default password for each of these accounts is PASSWORD. The privilege to change passwords, account names, and privileges are included in the ADMIN account.

1. At the Total Access 1500 System login screen (Figure 7), type the default, **ADMIN** (or the configured account name with System Administrator privileges), and press ENTER.

Type the default password, **PASSWORD** (or the configured password), and press ENTER.

```
TID:TR15000                                Total Access 1500 System                                MM/DD/YY hh:mm:ss
                                                Node: 1

Total Access 1500 System

Account Name : ADMIN
Password      : *****

'?' - System Help Screen
```

Figure 7. Total Access 1500 System Logon Screen

Once login is complete, the Total Access 1500 Main menu (Figure 8) is displayed.

```

Slot: SCU                TOTAL ACCESS SYSTEM 1500                MM/DD/YY hh:mm
Unacknowledged Alarms: NONE

                                Total Access 1500 Main Menu

                                1. System Controller
                                2. Online LIU - [LIU A]
                                3. Offline LIU - [LIU B]
                                4. Access Modules
                                5. Alarm Log
                                6. Auxiliary Shelf Access
                                7. Logoff

                                selection:

                                '?' - System Help Screen
    
```

Figure 8. Total Access 1500 Main Menu

From the Total Access 1500 Main menu, select the Access Modules option, and press ENTER. The Access Module menu (Figure 9) displays all modules installed in the shelf. In this example, the TR DDS-DP is installed in Slot 11.

```

Slot: 11                TOTAL ACCESS SYSTEM 1500                MM/DD/YY hh:mm:ss
Unacknowledged Alarms: NONE

                                Access Modules

                                1. ....
                                2. ....
                                3. ....
                                4. ....
                                5. ....
                                6. ....
                                7. ....
                                8. ....
                                9. ....
                                10. ....
                                11. TR DDS-DP
                                12. ....
                                13. ....
                                14. ....
                                15. ....
                                16. ....
                                17. ....
                                18. ....
                                19. ....
                                20. ....
                                21. ....
                                22. ....
                                23. ....
                                24. ....

                                selection:

                                '?' - System Help Screen
    
```

2. From the Access Modules menu, select the TR DDS-DP by entering the corresponding slot number, and press ENTER. The Main Menu (see Figure 9) is displayed.

Main Menu

Main Menu

The TR DDS-DP Access Module main menu (Figure 9) is the access portal to all other operations involving the TR DDS-DP. The main menu options have several functions and submenus that identify and provide access to specific operations and parameters.

```
Slot: 11                TOTAL ACCESS SYSTEM 1500                MM/DD/YY hh:mm:ss
Unacknowledged Alarms: NONE

                                Total Reach DDS-DP Access Module

                                1. Configuration
                                2. Provisioning
                                3. Status
                                4. Loopbacks
                                5. Time And Date

                                Selection:

'?' - System Help Screen
```

Figure 9. Main Menu

Configuration Screen

Main Menu\Configuration Screen

The Total Reach DDS-DP Configuration Screen (Figure 10) lists information pertaining to the unit, such as Name, CLEI Code, Part Number, and Software Revision.

```
Slot: 11                TOTAL ACCESS SYSTEM 1500                MM/DD/YY hh:mm:ss
Unacknowledged Alarms: NONE

                                Total Reach DDS-DP Configuration

                                Unit Name           TR DDS-DP
                                CLEI Code          VAL2JG0AAA
                                Part Number        1180105L1
                                Software Revision   A

                                '?' - System Help Screen
```

Figure 10. Configuration Screen

Provisioning Menu

Main Menu\Provisioning Menu

The Total Reach DDS-DP Provisioning Menu (Figure 11) shows each possible option available for modification. Latching Loopback is enabled for all rates other than 64 kbps where it can be set to "Protected." Option 8 "OCU LBO to customer" is not available until the DDS-DP is synchronized with the Total Reach remote unit.

```
Slot: 11                TOTAL ACCESS SYSTEM 1500                MM/DD/YY hh:mm:ss
Unacknowledged Alarms: NONE

                                Total Reach DDS-DP Provisioning

                                1. Data Rate                64 kbps
                                2. Secondary Channel          Disabled
                                3. Error Correction            Disabled
                                4. Zero Code Suppression      Disabled
                                5. Latching Loopback          Protected
                                6. Hardware A/B Signaling      Disabled
                                7. Quality Monitor Disconnect  Disabled
                                8. OCU LBO to customer         0dB

                                Selection:

                                '?' - System Help Screen
```

Figure 11. Provisioning Menu

The text “***INVALID CONFIGURATION***” as seen in (Figure 12) will appear on the screen if the user selects provisioning prohibited by the unit. Invalid configurations include the following combinations: 64 kbps Secondary Channel, 64 kbps Zero Code Suppression, Hardware A/B Signaling at any rate other than SW56, SW56 Error Correction, and SW56 Secondary Channel.

```
Slot: 11                TOTAL ACCESS SYSTEM 1500                MM/DD/YY hh:mm:ss
Unacknowledged Alarms: NONE

                                Total Reach DDS-DP Provisioning

                                ***INVALID CONFIGURATION***

                                1. Data Rate                64 kbps
                                2. Secondary Channel          Disabled
                                3. Error Correction            Disabled
                                4. Zero Code Suppression      Disabled
                                5. Latching Loopback          Protected
                                6. Hardware A/B Signaling     Disabled
                                7. Quality Monitor Disconnect  Disabled
                                8. OCU LBO to customer        0dB

                                Selection:

                                '?' - system Help screen
```

Figure 12. Provisioning Menu Showing Invalid Configuration

Data Rate Menu

Main Menu\Provisioning Menu\Data Rate Menu

The Data Rate menu (Figure 13) allows the data rate to be changed by selecting one of the data rates from the menu

```
Slot: 11                TOTAL ACCESS SYSTEM 1500                MM/DD/YY hh:mm:ss
Unacknowledged Alarms: NONE

                                Data Rate                64 kbps

1. 64 kbps
2. 56 kbps
3. 19.2 kbps
4. 9.6 kbps
5. 4.8 kbps
6. 2.4 kbps
7. Sw56

Selection:

                                '?' - System Help Screen
```

Figure 13. Data Rate Menu

Status Screen

Main Menu\Status Screen

The Total Reach DDS-DP Status Screen (Figure 14) is used to quickly trouble shoot certain problems based on the following criteria: Trouble Code to Network, Loop Receive Signal, Quality Monitor Decision, Loop Circuit, Loopback.

```
Slot: 11                                TOTAL ACCESS SYSTEM 1500                MM/DD/YY hh:mm:ss
Unacknowledged Alarms:

                                     Total Reach DDS-DP Status

          Trouble Code to Network        No
          Loop Receive Signal           Yes
          Quality Monitor Decision       Good
          Loop Circuit                   Busy
          Loopback                       None

                                     '?' - System Help Screen
```

Figure 14. Status Menu

Loopback Menu

Main Menu\Loopback Menu

The Total Reach DDS-DP Local Loopbacks Menu (Figure 15) initiates and releases local bidirectional loopbacks and remote unit loopbacks to the network.

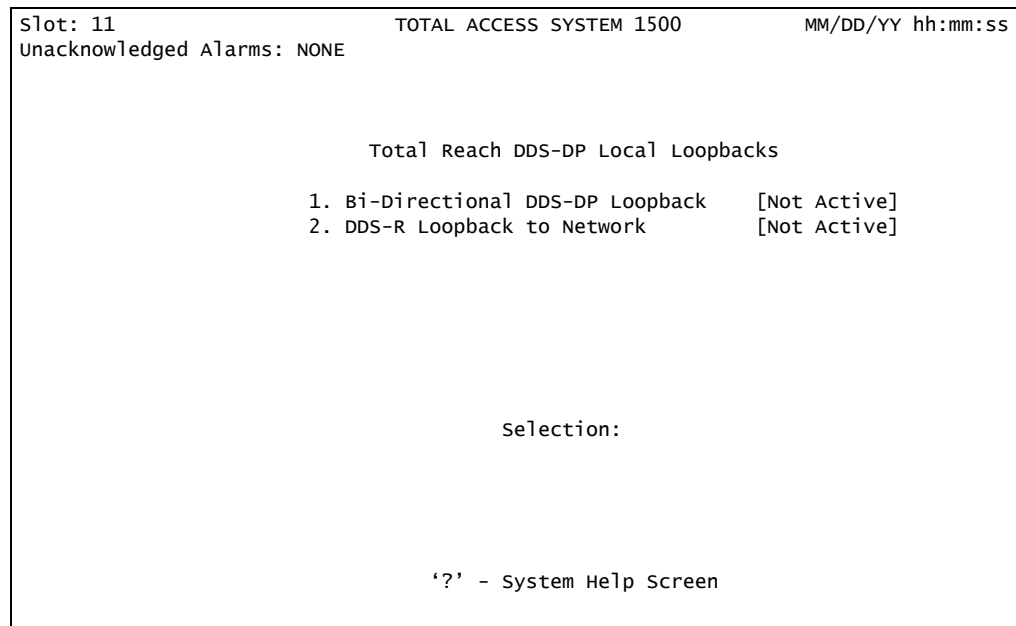


Figure 15. Loopback Screen

DDS-DP Time and Date Screen

Main Menu\DDS-DP Time and Date Screen

The Total Reach DDS-DP Time and Date Screen (Figure 16) displays the time and date from the Total Access 1500 SCU and then passes it on to the Total Reach remote unit. The time and date is used by the Total Reach remote unit to time-stamp performance monitoring data at 15 - minute and 24 - hour intervals.

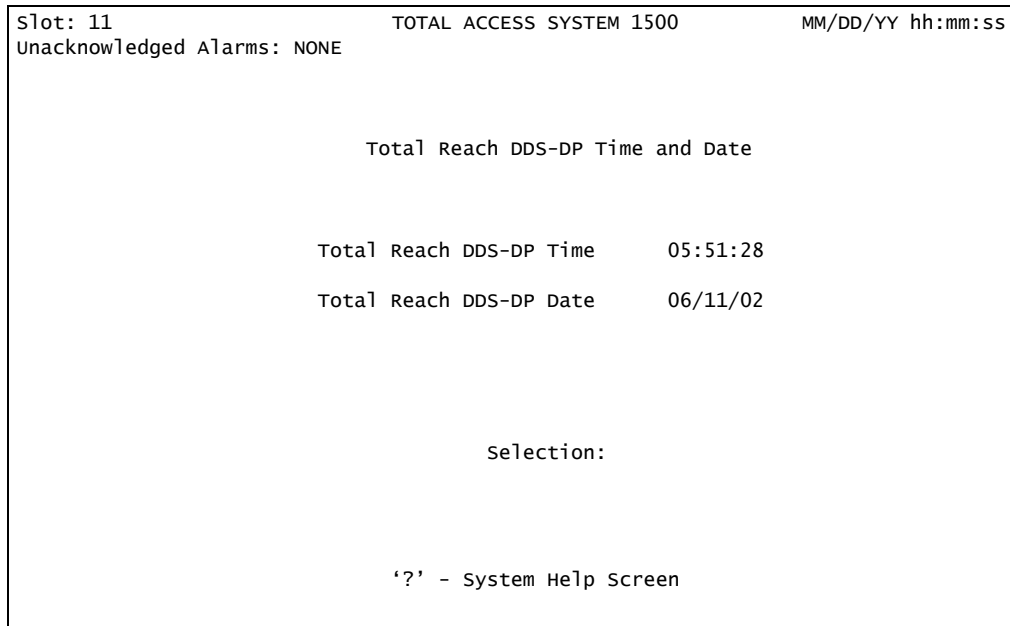


Figure 16. DDS-DP Time and Date

Deployment Guidelines

The Total Reach DDS-DP and DDS-R use technology intended to eliminate the need for repeaters and concerns over impairments caused by typical noise and bridged tap. [Table 8](#) describes cable loss for the Total Reach DDS Nyquist frequency of 13.3 kHz, while [Table 9](#) measures the DDS insertion loss. Listed below are the loop design guidelines for Total Reach DDS:

- All loops must be nonloaded.
- Actual measured loss (AML) should not exceed 50 dB at 13.3 kHz (135 Ω termination), the Nyquist frequency of Total Reach DDS.

NOTE

The 50 dB AML limit includes 6 dB of signal margin to account for potential near-end cross talk (NEXT) from other digital services that may be provisioned in the same binder group.

- Loop length should not exceed 50 kft.
- Bridged tap length should not exceed 12 kft.
- Background noise level should not exceed 34 dBm.
- Impulse noise level should not exceed -40 dBm, (+50 dBm).

Table 8. Cable Type and Temperature Loss Data @ 13.3 kHz

Plastic Cable	dB Loss/kft	Paper Cable	dB Loss/kft
19 Gauge PIC (0° F)	0.5302	19 Gauge PULP (0° F)	0.5616
19 Gauge PIC (70° F)	0.6083	19 Gauge PULP (70° F)	0.6415
19 Gauge PIC (120° F)	0.6610	19 Gauge PULP (120° F)	0.6955
22 Gauge PIC (0° F)	0.912	22 Gauge PULP (0° F)	0.9454
22 Gauge PIC (70° F)	1.0258	22 Gauge PULP (70° F)	1.0606
22 Gauge PIC (120° F)	1.1015	22 Gauge PULP (120° F)	1.1370
24 Gauge PIC (0° F)	1.2571	24 Gauge PULP (0° F)	1.2900
24 Gauge PIC (70° F)	1.3982	24 Gauge PULP (70° F)	1.4324
24 Gauge PIC (120° F)	1.4917	24 Gauge PULP (120° F)	1.5268
26 Gauge PIC (0° F)	1.6751	26 Gauge PULP (0° F)	1.6823
26 Gauge PIC (70° F)	1.8469	26 Gauge PULP (70° F)	1.8568
26 Gauge PIC (120° F)	1.9608	26 Gauge PULP (120° F)	1.9718

Table 9. Total Reach DDS Insertion Loss Measurements

Line Configuration	@ 13.3 kHz	@ 28 kHz
27 kft 26 AWG	50.12 dB	65.35 dB
36.25 kft 24 AWG	50.00 dB	62.50 dB
50 kft 22 AWG	50.24 dB	59.33 dB

NOTE

Measure noise with 50 kbit weighting characteristic approximating a filter with a passband of 40 Hz to 30 kHz. Background noise level or impulse noise level is referenced from 56/64 kbps data rate in TR62310.

Maintenance

The TR DDS-DP does not require routine maintenance for normal operation. Do not attempt to repair the TR DDS-DP in the field. Repair services are obtained by returning the defective unit to ADTRAN. Refer to [Appendix A, "Warranty"](#) for further information.

Specifications

Specifications for the TR DDS-DP are detailed in [Table 10](#).

Table 10. Specifications

Specification	Description
Electrical	
Total Power:	75 watts
Maximum Current Draw:	0.070 A maximum @ -48VDC
Maximum Heat Dissipation:	2.0 watts
System Fusing:	5.0 amps GMT (one fuse for each unit)
Tests	
Diagnostics:	Self Test
Environmental	
Operating Temperature:	-40°C to 65°C
Storage Temperature:	-40°C to +70°C
Relative Humidity:	95 percent maximum, noncondensing
Physical	
Dimensions:	Height: 3.125 inches Width: 0.62 inches Depth: 10.1 inches
Weight:	< 1 pound
Part Number	
Total Access 1500 Total Reach DDS-DP:	1180105L1



Appendix A

Warranty

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.

ADTRAN Customer Care

From within the U.S.: **1.800.726.8663**

From outside the U.S.: **+1 256.963.8716**

ADTRAN Sales

Pricing/Availability: **1.800.827.0807**

ADTRAN Technical Support

Pre-Sales Applications/Post-Sales Technical Assistance: **1.800.726.8663**

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: **1.256.963.8722**

Repair and Return Address

Contact CAPS prior to returning equipment to ADTRAN.

ADTRAN, Inc.

CAPS Department

901 Explorer Boulevard

Huntsville, Alabama 35806-2807



Carrier Networks Division
901 Explorer Blvd.
Huntsville, AL 35806
U.S.A.

<http://www.adtran.com>

ADTRAN CUSTOMER CARE
From within the U.S. 1.800.726.8663
From outside the U.S. +1 256.963.8716

PRICING AND AVAILABILITY
1.800.827.0807



installation guide