Total Access® 1500
Dual 4-Wire TO Access Module
Installation and Maintenance

CONTENTS

FIGURES

TABLES

1. GENERAL

This practice provides installation and maintenance procedures for the ADTRAN Total Access 1500 Dual 4-Wire Transmit Only (TO) Access Module. **Figure 1** is an illustration of the Total Access 1500 Dual 4-Wire TO.

Revision History

This is the initial release of this document. Future revisions to this document will be explained in this subsection.

General Description

The Dual 4-Wire TO Access Module is intended to be deployed in the Total Access 1500 Chassis. The Dual 4-Wire TO provides for two individual 4-wire analog interfaces between a VF transmission facility and the Total Access 1500 Pulse Coded Modulation (PCM) backplane. Each TO interface provides 4-wire voice-grade (analog) data services with no signaling associated with the circuit, or where signaling is provided by in-band tones.

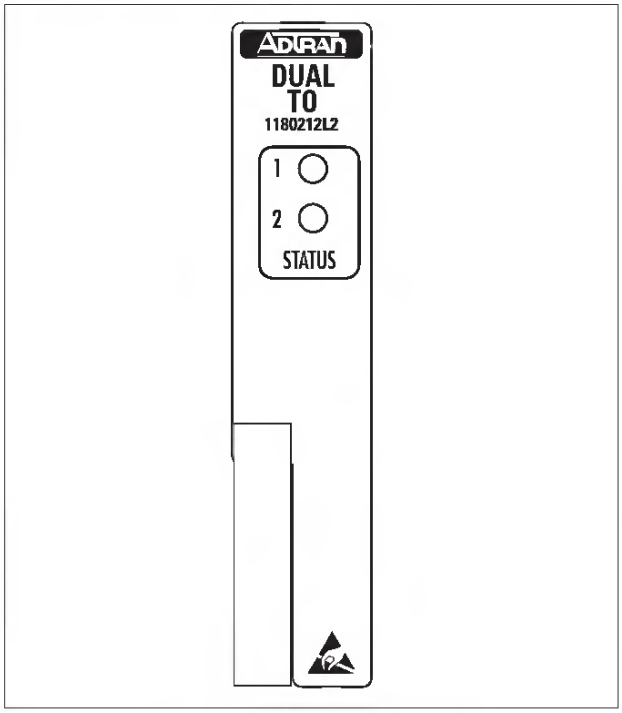

Figure 1. Dual 4-Wire TO

Features

The features of the Dual 4-Wire TO (P/N 1180212L2) include the following:

- Two independent DC-isolated 4-wire VF channel interfaces
- Extended operating temperature range from -40°C to +65°C
- TLP transmit input range of +5.0 to -16.0 dBm in 0.1 dB increments
- TLP receive output range of +8.5 to -9.5 dBm in 0.1 dB increments
- Supports configurations for Sink, Source or No Sealing Current
- Provisioning by craft interface or Site Manager
- Digital Loopback and 1004 Hz Digital Reference Signal (DRS) Tone Tests via craft port or Site Manager
- NEBS Level 3 and UL 1950 compliant

2. INSTALLATION

Remove the Total Access 1500 Dual 4-Wire TO from the carton and visually ensure that damage has not occurred during shipping or handling. If damage has occurred, file a claim with the carrier, then contact ADTRAN. Refer to *Warranty and Customer Service* section of this practice.

The Dual 4-Wire TO inserts into any Access Module slot (1 through 24) of the Total Access 1500 chassis.

To install the Dual 4-Wire TO access module, perform the following steps:

1. Hold the unit by the front panel while supporting the bottom side.
2. Align the card edges to the guide grooved for the designated slot.
3. Insert the card until the edge connector seats firmly into the backplane.
4. Push the ejector in place to ensure the unit is fully seated.

Compliance

Table 1 shows the Compliance Codes for the Dual 4-Wire TO. The Dual 4-Wire TO complies with UL 1950, third edition. It is intended for installation in restricted access locations only and in equipment with a Type "B" or "E" installation code.

Table 1. Compliance Codes

Code	Input	Output
Power Code (PC)	C	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 hy ADTRAN could void the user's authority to operate this equipment.

Time Slot Assignments

For time slot assignments in the Dual T1 mode and in the Quad T1 mode, refer to **Table 2**.

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. The system will automatically map DS0s in the T1 as determined by the LIU operational configuration. Manual mapping is available via the LIU menu.

Connections

Four 50-pin male amphenol connectors on the rear of the Total Access 1500 chassis provide the interconnect wiring for each of the access module physical slots. The Dual 4-Wire TO requires P1 (T/R) and P2 (T1/R1) for the odd ports of each access module, while P3 (T/R) and P4 (T1/R1) for the even ports. See Table 2 for wiring interconnect details.

Table 2. Time Slot and Wiring Interconnect

Physical Slot	Associated T1/DSO			Port	Amphenol Connection	Interconnect Wiring
	Dual T1	Quad T1 (D4)	Quad T1 (D1D)			
1	A1 A2	A1 A2	A1 A3	1 2	P1 - 26/1 P2 - 26/1 P3 - 26/1 P4 - 26/1	T/R T1/R1 T/R T1/R1
2	A3 A4	A5 A6	A9 A11	1 2	P1 - 27/2 P2 - 27/2 P3 - 27/2 P4 - 27/2	T/R T1/R1 T/R T1/R1
3	A5 A6	A9 A10	A17 A19	1 2	P1 - 28/3 P2 - 28/3 P3 - 28/3 P4 - 28/3	T/R T1/R1 T/R T1/R1
4	A7 A8	A13 A14	A2 A4	1 2	P1 - 29/4 P2 - 29/4 P3 - 29/4 P4 - 29/4	T/R T1/R1 T/R T1/R1
5	A9 A10	A17 A18	A10 A12	1 2	P1 - 30/5 P2 - 30/5 P3 - 30/5 P4 - 30/5	T/R T1/R1 T/R T1/R1
6	A11 A12	A21 A22	A18 A20	1 2	P1 - 31/6 P2 - 31/6 P3 - 31/6 P4 - 31/6	T/R T1/R1 T/R T1/R1
7	A13 A14	B1 B2	B1 B3	1 2	P1 - 32/7 P2 - 32/7 P3 - 32/7 P4 - 32/7	T/R T1/R1 T/R T1/R1
8	A15 A16	B5 B6	B9 B11	1 2	P1 - 33/8 P2 - 33/8 P3 - 33/8 P4 - 33/8	T/R T1/R1 T/R T1/R1
9	A17 A18	B9 B10	B17 B19	1 2	P1 - 34/9 P2 - 34/9 P3 - 34/9 P4 - 34/9	T/R T1/R1 T/R T1/R1
10	A19 A20	B13 B14	B2 B4	1 2	P1 - 35/10 P2 - 35/10 P3 - 35/10 P4 - 35/10	T/R T1/R1 T/R T1/R1
11	A21 A22	B15 B16	B10 B12	1 2	P1 - 36/11 P2 - 36/11 P3 - 36/11 P4 - 36/11	T/R T1/R1 T/R T1/R1
12	A23 A24	B21 B22	B18 B20	1 2	P1 - 37/12 P2 - 37/12 P3 - 37/12 P4 - 37/12	T/R T1/R1 T/R T1/R1

Table 2. Time Slot and Wiring Interconnect (continued)

Physical Slot	Associated T1/DSO			Port	Amphenol Connection	Interconnect Wiring
	Dual T1	Quad T1 (D4)	Quad T1 (D1D)			
13	B1 B2	C1 C2	C1 C3	1 2	P1 - 38/13 P2 - 38/13 P3 - 38/13 P4 - 38/13	T/R T1/R1 T/R T1/R1
14	B3 B4	C5 C6	C9 C11	1 2	P1 - 39/14 P2 - 39/14 P3 - 39/14 P4 - 39/14	T/R T1/R1 T/R T1/R1
15	B5 B6	C9 C10	C17 C19	1 2	P1 - 40/15 P2 - 40/15 P3 - 40/15 P4 - 40/15	T/R T1/R1 T/R T1/R1
16	B7 B8	C13 C14	C2 C4	1 2	P1 - 41/16 P2 - 41/16 P3 - 41/16 P4 - 41/16	T/R T1/R1 T/R T1/R1
17	B9 B10	C17 C18	C10 C12	1 2	P1 - 42/17 P2 - 42/17 P3 - 42/17 P4 - 42/17	T/R T1/R1 T/R T1/R1
18	B11 B12	C21 C22	C18 C20	1 2	P1 - 43/18 P2 - 43/18 P3 - 43/18 P4 - 43/18	T/R T1/R1 T/R T1/R1
19	B13 B14	D1 D2	D1 D3	1 2	P1 - 44/19 P2 - 44/19 P3 - 44/19 P4 - 44/19	T/R T1/R1 T/R T1/R1
20	B15 B16	D5 D6	D9 D11	1 2	P1 - 45/20 P2 - 45/20 P3 - 45/20 P4 - 45/20	T/R T1/R1 T/R T1/R1
21	B17 B18	D9 D10	D17 D19	1 2	P1 - 46/21 P2 - 46/21 P3 - 46/21 P4 - 46/21	T/R T1/R1 T/R T1/R1
22	B19 B20	D13 D14	D2 D4	1 2	P1 - 47/22 P2 - 47/22 P3 - 47/22 P4 - 47/22	T/R T1/R1 T/R T1/R1
23	B21 B22	D15 D16	D10 D12	1 2	P1 - 48/23 P2 - 48/23 P3 - 48/23 P4 - 48/23	T/R T1/R1 T/R T1/R1
24	B23 B24	D21 D22	D18 D20	1 2	P1 - 49/24 P2 - 49/24 P3 - 49/24 P4 - 49/24	T/R T1/R1 T/R T1/R1

3. PROVISIONING

There are no hardware options in the Dual 4-Wire TO access module; its specific options can he provisioned from the Site Manager or from a DB-9 VT100 craft port on the Total Access 1500 SCU. The factory default settings for the Dual 4-Wire TO access module are noted in Bold Text in **Table 3**.

Password and User ID

Password protection is factory disahled. If password protection is enahled, then the SCU will display the log on screen, and a valid user ID and password are required to access menus. The factory default user ID is USER, and the default password is PASSWORD hoth are in all capital letters. Both the user ID and password are required.

Menu Navigation

To traverse through the menus, select the desired entry and press ENTER. To work hackward in the menu press the ESC (escape) key.

The menu tree in **Figure 2** illustrates the path to every provisioning, performance, and test access point in the Total Access 1500 Dual FXS/DPO menu.

Table 3. Dual 4-Wire TO Options

Function	Option	Description
Transmit TLP	-16.0 to +5.0 dBm (**+0.0**)	Transmit channel attenuation in 0.1 dB steps.
Receive TLP	-9.5 to +8.5 dBm (**+0.0**)	Receive channel attenuation in 0.1 dB steps.
Sealing Current Mode	**None** Sink Source	Selects mode of sealing current operation.

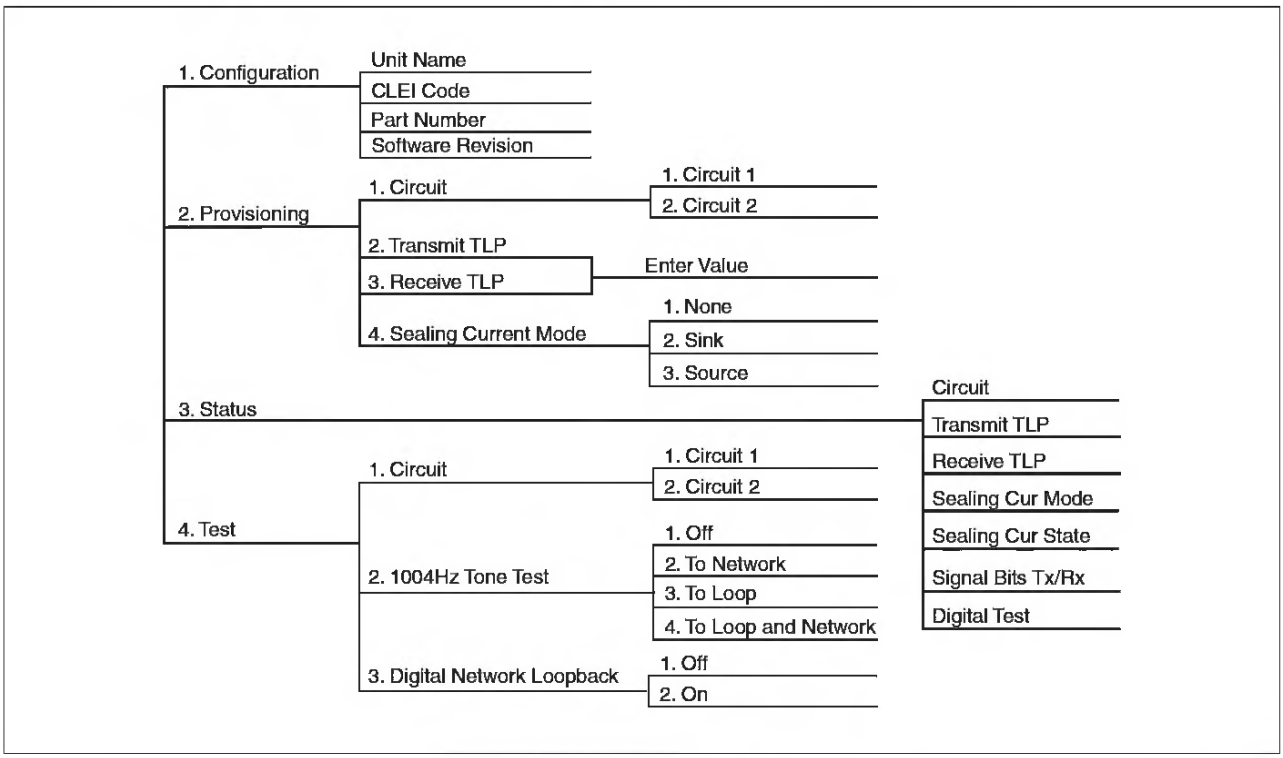

Figure 2. Dual 4-Wire TO Menu Tree

Front Panel LEDs

The Total Access 1500 Dual 4-Wire TO has two front panel LEDs that provide status information for each interface. See **Table** 4 for LED indications.

4. TEST FEATURES

Initiated Tests

The Dual 4-Wire TO supports a Digital Network Loopback and 1004 Hz Tone Tests for each port to support circuit turnup and maintenance efforts. These tests are initiated from the Total Access Site Manager or the Total Access 1500 Local Craft Port on the SCU, and are initiated on an individual port basis.

Digital Network Loopback Test

The Digital Network Loopback provides a loopback path for the DS0 data from the network. Received data of the selected port is latched in on the appropriate receive time slot on the receive bus, and then placed on the transmit bus in the appropriate port's transmit time slot.

1004 Hz Tone Test

The 1004 Hz Tone Test generates a 1004 Hz @ 0 dBm Digital Reference Signal (DRS) tone, which is used to send DRS signal to the loop, to the network, or to both simultaneously.

5. MAINTENANCE

The Total Access 1500 Dual 4-Wire TO requires no routine maintenance for normal operation.

ADTRAN does not recommend that repairs be performed in the field. Repair services may be obtained by returning the defective unit to ADTRAN. Refer to *Warranty and Customer Service* section for further information.

6. SPECIFICATIONS

Specifications for the Dual 4-Wire TO are detailed in **Table** 5.

7. WARRANTY AND CUSTOMER SERVICE

ADTRAN will replace or repair this product within ten (10) years from the date of shipment if it does not meet its published specifications or fails while in service. Refer to ADTRAN *U.S. and Canada Carrier Networks Equipment Warranty,* Document 60000087-10.

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

For service, CAPS requests, or further information, contact one of the following numbers:

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

Table 4. Front Panel LEDs

Label	Condition	Description
1	Green Yellow Red	Port 1 is operating normally Port 1 is in a menu controlled test Port 1 failure has been detected
2	Green Yellow Red	Port 2 is operating normally Port 2 is in a menu controlled test Port 2 failure has been detected

Table 5. Specifications

Performance	
Transmit TLP Range:	+5.0 to -16 dBm in 0.1 dB increments
Receive TLP Range:	+8.5 to -9.5 dBm in 0.1 dB increments
Frequency Response:	±0.25 dB, 300 to 3000 Hz
Echo Return Loss:	≥ 28 dB
Singing Return Loss:	≥ 20 dB
Longitudinal Balance:	≥ 58 dB @ 200 to 1 kHz; 53 dB @ 3 kHz
Idle Channel Noise:	≤ 23 dBrnC0
PCM Encoding/Decoding:	µ-law
Power	
Current Draw:	0.050 A maximum @ -48 V
Physical	
Dimensions:	3.125 in. H x 0.62 in. W x 10.1 in. D
Weight:	< 1 lb.
Environment	
Operating Temperature (Standard):	-40ºC to +65ºC
Storage Temperature:	-40ºC to +85ºC
Relative Humidity:	95% maximum @ 50ºC, noncondensing
Heat Dissipation:	2.4 watts maximum
Compliance	
UL 1950 NEBS Level 3 FCC 47CFR Part 15, Class A	
Part Number	
Total Access 1500 Dual 4-Wire Transmit Only Access Module	1180212L2