Total Access™ 1500 Chassis
Installation and Maintenance
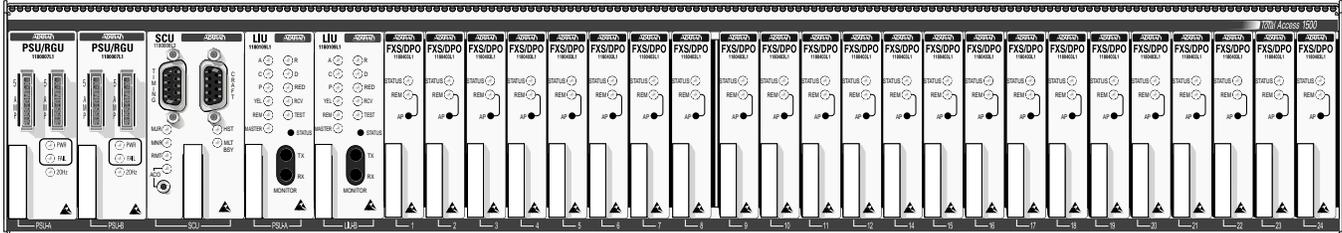

Figure 1. Total Access 1500 Chassis

CONTENTS

FIGURES

TABLES

1. GENERAL

This practice provides installation and maintenance procedures for the ADTRAN Total Access 1500 (Total Access 1500) Chassis. **Figure 1** is an illustration of the Total Access 1500 Chassis. Part number for equipment and documents referenced in this practice are located in the Specifications Table. Referenced practices should be on-hand during system installation.

Revision History

This is the second release of this document. Alarm information for quad T1 mode has been added, and information regarding connection to Pair Gain Test Controller (PGTC) has been added.

Features

The Total Access 1500 Chassis, part number 1180001L1, features include the following:

- Rackmount design
- Scalable Network Connectivity
  -1-4 T1 capacity
- Protect T1 for TR-08 applications
- Three common units:
  -Power Supply/Ring Generator (PSU/RGU)
  -System Controller Unit (SCU)
  -Line Interface Unit (LIU)
- T1 Network Interface
- 24 slots for combination of voice and data services
- Variety of access module units
- Network management capabilities - TL1, SNMP
- Multiple configuration arrangements
- TR-08 Compatible (Modes 1 and 3)
- Supports Mechanized Loop Testing (MLT)
- FCC and UL 1950 compliant
- Meet NEBS Level 3 requirements

General Description

The Total Access 1500 Chassis is designed to meet a variety of operating configurations and services, such as POTS, Special Services, and xDSL. The Total Access 1500 is intended for use in central office and remote terminal applications. The Total Access 1500 System is comprised of the chassis, common cards, and access modules.

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, 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.

Physical Description

The Total Access 1500 chassis is 21.2 inches wide by 3.5 inches high by 12 inches deep and is made of heavy gauge metal. The unit mounts in a standard 23-inch wide rack. The shelf's operating temperature range is -40ºC to +65ºC for remote terminal applications.

PSU/RGU

The Power Supply Unit/Ring Generator Unit supplies -48 Vdc and 20 Hz ring voltage to the SCU and the access modules. The PSU/RGU converts -48 Vdc input to the required voltages needed to operate all common units and access modules. The ring generator circuit provides 20 Hz ring voltage to the analog access modules. A PSU is also available which operates with an external Ring Generator.

The PSU/RGU faceplate shows a GMT fuse for power and ringing voltage, Fail, and 20 Hz Status LEDs. The Power Supply circuitry is fully redundant, with each Ring Generator supplying 20 REN. If both Ring Generators are operating properly, 40 REN is supplied to the access modules.

SCU

The System Controller Unit provides network management capability for the channel bank. The SCU can provision, test, and provide status for any card in the channel bank. It is also available in COT and RT versions with Mechanized Loop Testing. The faceplate has craft interface, test equipment timing output, alarm and status indicators, plus an ACO (Alarm Cut-Off) switch.

LIU

The Line Interface Unit connects the channel bank to four T1 lines, with a separate T1 that is included for protection switching. The LIU generates control signals and clocks used by the channel units, as well as controls both manually and remotely initiated T1 loopbacks. It detects alarm conditions and reports the alarm status to the SCU. The faceplate has a dual bantam jack for T1 test access, status LEDs, and a STATUS pushbutton.

Access Modules

Several access modules are available to deliver various services. These modules include the following:

- OCU DP, Office Channel Unit Dataport, 1180005L1.
- DS0 DP, Digital Signal Zero Data Port, 1180003L1.
- U-BR1TE, U-Interface Basic Rate Interface card, 1180020L1.
- E&M/TO, Ear and Mouth, Transmit Only, 1180402L1.
- FXS/DPO/PLAR, 2-wire Foreign Exchange Station/ Dial Pulse Originate/ Primary Line Auto Ring, 1180403L1.
- FXO/DPT, 2-wire Foreign Exchange Office/ Dial Pulse Terminate, 1180404L1.
- Quad FXS/RPOTS (RT), 2-Wire POTS (RT), 1180408L1.
- Quad FXO CPOTS, Quad Foreign Exchange Office, Central Office Terminal POTS, 1175407L1, L2.
- Dual DS0 DP, Dual Digital Signal Zero Data Port, 1180203L2.
- Dual OCU DP, Dual Office Channel Unit Data Port, 1180205L2.
- Dual FXO/DPT, Dual 2-Wire Foreign Exchange Station/Dial Pulse Terminate, 1180207L2.
- Dual FXS/DPO/PLAR, Dual 2-Wire Foregin Exchange Station/Dial Pulse Originate/Primary Line Auto Ring, 1180208L2.
- TAU, Test Access Unit, 1180006L1.

Document part numbers for these units are found in the Specifications table, (page 12, table 2).

2. INSTALLATION

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 discovered, file a claim with the carrier, then contact ADTRAN. See *Warranty and Customer Service*.

NOTE

This product is intended for installation in RESTRICTED ACCESS LOCATIONS only.

Compliance Codes

This product is intended to be installed in products providing a Type "B" or "E" enclosure, and in a Restricted Access Location. See **Table 1**.

Table 1. Compliance Codes

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

Tools Required

The required tools for the Total Access 1500 installation are:

- Wire-wrap tool
- #2 Phillips-head screwdriver
- #1 Phillips-head screwdriver
- Straight-slot-head screwdriver
- Multimeter
- Crimping tool for power lugs
- Wire strippers
- Side cutters
- 3/16-inch wrench

Material that should be on hand:

- Four screws for mounting each Total Access 1500 shelf to the rack
- Shielded 2-wire, twisted pair cross-connect wire with drain, such as AT&T P7 wire
- Insulated wire for power connections, in colors dictated by your CO for battery to the Total Access 1500 shelf and return
- Insulated wire for frame ground
- Lugs for the power wire and Frame Ground connection

Unpack and Inspect the Shelf

Each Total Access 1500 shelf is shipped in its own cardboard shipping carton unless it was ordered as a fully racked system. Open each carton carefully and avoid deep penetration into the carton with sharp objects.

After unpacking the unit, inspect it for damage. If the equipment has been damaged, file a claim with the carrier and then contact ADTRAN. See *Warranty and Customer Service* section.

Mounting the Shelf

Mounting Bracket Orientation

The Total Access 1500 shelf comes with mounting brackets that can be mounted with the flanges facing forward or backward in two different locations on the shelf sides. Therefore, the rack can be flush-mounted or mid-mounted. Attaching the mounting brackets to the shelf requires four screws on each side, and are supplied with the unit.

The following are the recommended ways to mount the shelf:

1. Flush-mounting: For flush-mounting on the rack, use a #2 Phillips-head screwdriver and attach the mounting brackets with the flanges facing rearward on the rear mounting holes.
2. Mid-mounting: For mid-mounting, use a #2 Phillips-head screwdriver and attach the mounting brackets with the flanges facing forward on the front mounting holes.

Installing the Shelf

After attaching the mounting brackets to the Total Access 1500 shelf sides, use the appropriate screws for your Central Office rack type and mount the shelf in the rack as follows:

1. Flush-mount: For flush-mount systems, the Total Access 1500 shelf must be mounted from the rear of the rack, with mounting bracket flanges facing rearward.
2. Mid-mount: For mid-mount systems, the Total Access 1500 shelf must be mounted from the front of the rack, with the mounting bracket flanges facing forward.

NOTE

Other orientations will require either mounting from the front or rear, and depend on the rack type installed in the CO and the standard operating procedures established by your CO.

Once the orientation of the shelf has been determined, use the four appropriate screws for your CO rack and an appropriate screwdriver and secure the Total Access 1500 shelves in place on the rack.

Power Connections
Interconnections between the common card modules and channel units are accomplished through the backplane PCB. All external connections to the Total Access 1500 are through connectors and wire-wrap headers located on the backplane.

NOTE

When connecting power and ground wiring, be sure to follow all local, national, and company codes.

All permanent connections to the Total Access 1500 are made on the backplane. **Figure 2** shows the location of the power and ground connections, and **Figure 3** shows the backplane and pin-outs.
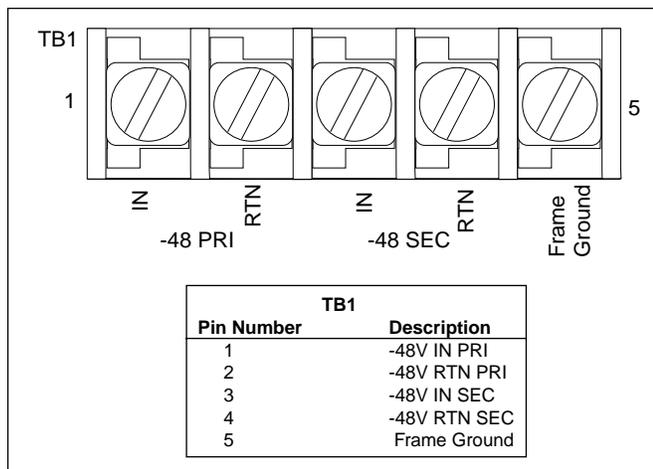

TB1	
Pin Number	**Description**
1	-48V IN PRI
2	-48V RTN PRI
3	-48V IN SEC
4	-48V RTN SEC
5	Frame Ground

Figure 2. Power and Ground Connectors

Frame Ground Connection
The frame ground terminal, located on the upper right corner of the backplane (see Figure 3), should be connected using appropriately sized wire. Use a wire gauge that is at least the same gauge as the power wiring. To make the frame ground connection to the Total Access 1500:

1. Using the crimping tool, connect an appropriate lug to each end of the appropriately sized wire.
2. Connect the ground wire from Total Access 1500 Frame ground terminal to the Equipment Rack grounding screw.
3. Tighten the ground connection securely with a straight-slot screwdriver.

Test Frame Ground Connection
To ensure a good ground, use a multimeter to check continuity between the frame grounding lug and the rack grounding strap at the top of the rack. Using a voltmeter set to its lowest resistance range, if applicable, place one lead on the rack's ground strap and the other lead on the Total Access 1500 frame ground terminal. The reading should be 1 or 2 ohms. Greater readings should be investigated.

Power Connection

NOTE

Connect to a reliably grounded -48 Vdc source, which is electrically isolated from the AC source.

NOTE

A readily accessible disconnect device, such as a rack mount fuse and alarm panel that is suitably approved and rated, should be incorporated in the fixed wiring.

Power connections use a block, labeled TB1, located on the upper right side of the backplane (see Figure 2). The terminals are on .375 inch centers and allow for wire gauges up to 12 AWG. There is a separate Frame Ground/External Ring Generator terminal, labeled TB2, located on the bottom right side of the backplane, and can accommodate up to 14 AWG wire. The Frame Ground terminal routes to mechanical contact points and provides an electrical connection to the chassis metalwork.
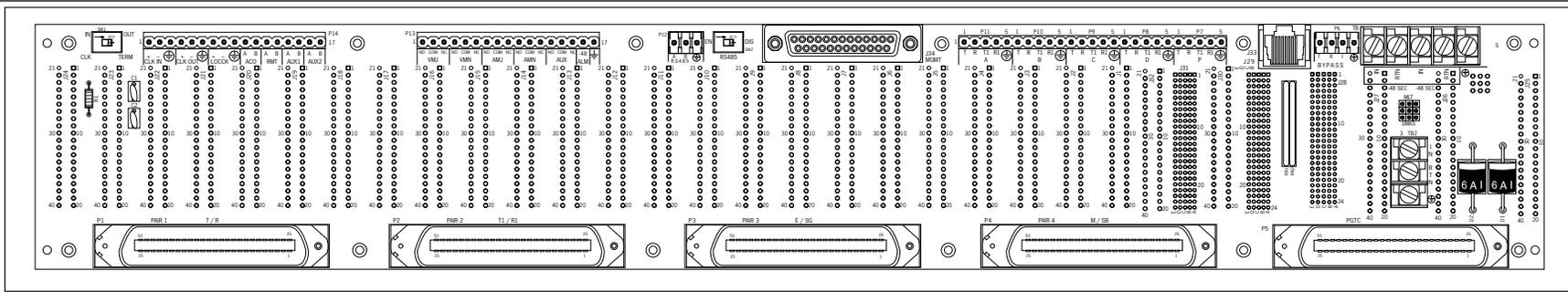
Ethernet (J33)

Pin Number	Description
1	ETHRTX +
2	ETHRTX -
3	ETHRRX +
4	X
5	X
6	ETHRRX -
7	X
8	X

RS-232 (J34)

Pin Number	Description
1	Frame Ground
2	TxD
3	RxD
4	RTS
5	CTS
6	DSR
7	GND
8	DCD
9	No Connect
10	No Connect
11	No Connect
12	No Connect
13	No Connect
14	No Connect
15	TXC
16	No Connect
17	RXC
18	No Connect
19	No Connect
20	DTR
21	No Connect
22	No Connect
23	No Connect
24	EXTC
25	No Connect

Amphenol Connectors

Pin Number	P1, P2, P3, P4	P5
1	Ring – Ch Slot 1	MLT RA
2	Ring – Ch Slot 2	MLT RB
3	Ring – Ch Slot 3	MLT RC
4	Ring – Ch Slot 4	MLT RD
5	Ring – Ch Slot 5	SLV B
6	Ring – Ch Slot 6	SLV D
7	Ring – Ch Slot 7	OH B
8	Ring – Ch Slot 8	OH D
9	Ring – Ch Slot 9	PROC B
10	Ring – Ch Slot 10	PROC D
11	Ring – Ch Slot 11	LOCK B
12	Ring – Ch Slot 12	LOCK D
13	Ring – Ch Slot 13	SMAS RA
14	Ring – Ch Slot 14	SMAS RB
15	Ring – Ch Slot 15	SMAS RC
16	Ring – Ch Slot 16	SMAS RD
17	Ring – Ch Slot 17	TMAJ
18	Ring – Ch Slot 18	No Connect
19	Ring – Ch Slot 19	No Connect
20	Ring – Ch Slot 20	No Connect
21	Ring – Ch Slot 21	No Connect
22	Ring – Ch Slot 22	SEZBY
23	Ring – Ch Slot 23	No Connect
24	Ring – Ch Slot 24	No Connect
25	No Connect	No Connect

Amphenol Connectors

Pin Number	P1, P2, P3, P4	P5
26	Tip – Ch Slot 1	MLT TA
27	Tip – Ch Slot 2	MLT TB
28	Tip – Ch Slot 3	MLT TC
29	Tip – Ch Slot 4	MLT TD
30	Tip – Ch Slot 5	SLV A
31	Tip – Ch Slot 6	SLV C
32	Tip – Ch Slot 7	OH A
33	Tip – Ch Slot 8	OH C
34	Tip – Ch Slot 9	PROC A
35	Tip – Ch Slot 10	PROC C
36	Tip – Ch Slot 11	LOCK A
37	Tip – Ch Slot 12	LOCK C
38	Tip – Ch Slot 13	SMAS TA
39	Tip – Ch Slot 14	SMAS TB
40	Tip – Ch Slot 15	SMAS TC
41	Tip – Ch Slot 16	SMAS TD
42	Tip – Ch Slot 17	TSTALM
43	Tip – Ch Slot 18	No Connect
44	Tip – Ch Slot 19	No Connect
45	Tip – Ch Slot 20	No Connect
46	Tip – Ch Slot 21	No Connect
47	Tip – Ch Slot 22	SEIZE
48	Tip – Ch Slot 23	No Connect
49	Tip – Ch Slot 24	No Connect
50	No Connect	No Connect

Alarm Outputs (P13)

Pin Number	Description
1	VMJ/AMJNO
2	VMJ/AMJCOM
3	VMJ/AMJNC
4	VMN/BMJNO
5	VMN/BMJCOM
6	VMN/BMJNC
7	AudMJ/CMJNO
8	AudMJ/CMJCOM
9	AudMJ/CMJNC
10	AudMN/DMJNO
11	AudMN/DMJCOM
12	AudMN/DMJNC
13	AUX/BANKMJNO
14	AUX/BANKMJCOM
15	AUX/BANKMJNC
16	-48ALM
17	GND

Composite Clock/Alarms (P14)

Pin Number	Description
1	CLKIN +
2	CLKIN -
3	FRAME GROUND
4	CLKOUT +
5	CLKOUT -
6	Frame Ground
7	LOCCK+
8	LOCCK-
9	Frame Ground
10	ACOA
11	ACOB
12	RMTA
13	RMTB
14	AUX1A
15	AUX1B
16	AUX2A
17	AUX2B

TB1

Pin Number	Description
1	-48V IN PRI
2	-48V RTN PRI
3	-48V IN SEC
4	-48V RTN SEC
5	Frame GND

TB2

Pin Number	Description
1	Frame Ground
2	20 HZ RTN
3	20 HZ EXT

RS-485 (P12)

Pin Number	Description
1	RS 485 A
2	RS 485 B
3	Frame Ground

Metallic Loop Test Bypass Pair (P6)

Pin Number	Description
1	BYPASS TIP
2	BYPASS RING
3	INHIBIT
4	Frame Ground

T1 Connections

Pin Number	P7 – Protect	P8 – T1 D	P9 – T1 C	P10 – T1 B	P11 - T1 A
1	T Protect	T D	T C	T B	T A
2	R Protect	R D	R C	R B	R A
3	T1 Protect	T1	T1 C	T1 B	T1 A
4	R1 Protect	R1 D	R1 C	R1 B	R1 A
5	Frame Ground	Frame Ground	Frame Ground	Frame Ground	Frame Ground

Figure 3. Total Access 1500 Backplane and Pin-outs

The power bus and frame ground route to all the cards in the shelf.

The number of shelves that can be placed in a 7-foot central office rack depends on the type of service deployed and the number of access modules in the shelf.

After connecting and checking the ground to the Total Access 1500 shelf, connect power to the shelf. Check to make sure your power source is providing the correct power and polarity to the shelf. To connect power to the shelf:

1. Determine which fuse pairs are to supply power to the Total Access 1500 shelf.
2. Remove the fuses from the A and B slots for the pair.
3. The power terminal is labeled TB1. Cut four lengths of appropriately sized wire to reach from the terminals on the fuse and alarm panel to the power terminals on the Total Access 1500 shelf.
4. Using the crimping tool, connect an appropriate lug to each end of the wires.
5. Using a screwdriver appropriate for the fuse and alarm panel terminals, and a straight slot or Phillips screwdriver for the Total Access 1500 power terminal, connect the ends of one wire between the "A" CO -48 Vdc supply and the "-48 Vdc PRIMARY IN" terminal on the Total Access 1500 backplane.
6. Connect three more power wires, connecting the "A" CO -48 Vdc return with -48 Vdc PRIMARY RTN; "B" CO -48 Vdc supply with -48 Vdc SECONDARY IN; and "B" CO -48 Vdc RTN with -48 Vdc SECONDARY RTN.

Apply Power and Check Voltage

Before proceeding further, ensure that power has been correctly applied to the shelf. The proper voltage to Total Access 1500 is -48 Vdc, with an operating range of -42 Vdc to -56 Vdc.

WARNING

Installing fuses in the fuse alarm panel at this stage will provide power to the shelf. There will be power to pins on the backplane and inside the shelf. Exercise caution to avoid electric shock.

NOTE

The chassis may be powered by multiple power sources. Disconnect all sources prior to servicing.

NOTE

The branch circuit overcurrent protection shall be a fuse or circuit breaker rated for a maximum of -48 Vdc @ 5.0A. Include the appropriate input current rating for the product.

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1. Install appropriate fuses (5 AMP max) in the slots in the fuse and alarm panel that services the Total Access 1500 shelf.
2. Using a voltmeter, place the common (normally black) lead on the TB1 -48 Vdc PRIMARY RET terminal and the DC volts (normally red) lead on the TB1 -48 Vdc PRIMARY IN terminal. The reading should be in the operating range of -42 Vdc to -56 Vdc, with a nominal value of -48 Vdc. Note the "–" polarity.
3. Using a voltmeter, test the connection using the TB1 -48 Vdc SECONDARY RTN terminal and the TB1 -48 Vdc SECONDARY IN terminal.
4. Remove the fuses from the fuse and alarm panel slots that provide power to the Total Access 1500.

Data Connections

An external composite clock input is required in the Central Office Terminal (COT) when deploying services from Total Access 1500. The following steps provide instruction on how to wire external composite clock to a single Total Access 1500.

1. Determine the "+", "–" and drain or ground wires from the CO clock source.
2. Using wire strippers, strip 1 to 1 1/2 inches of the insulation from the end of the clock source twisted pair, shielded, drop wire.
3. Using the wire-wrap tool, wire-wrap the "+" wire from the clock source to the pin marked "+" on connector P14, "CLK IN."
4. Wire-wrap the "–" wire from the clock source to the pin marked "–" on connector P14, "CLK IN."
5. Wire-wrap the drain or shield wire from the clock source to the pin marked "⏚" on connector P14, "CLK IN."
6. Tie the clock source wire neatly to the frame.
7. On SW1 mounted to the left of P14, move the switch to the "IN" position.

Up to 14 dual LIU systems or 28 single LIU systems may be daisy chained to a single output from the timing source, so only one wire run is required from the timing source for an installation of up to 14 or 28 Total Access 1500 shelves. Use wire of the same type as was used for the wire run from the CO clock source to the Total Access 1500 shelf. The following steps provide instructions for connecting up to 14 or 28 Total Access 1500 shelves to a single external timing source.

1. Determine the length of wire required to run from the first shelf, connector P14, to the second shelf, connector P14, which is to be wired in the same daisy chain. Leave approximately 1 to 1 1/2 inches for wire-wrapping.
2. Using wire strippers, strip approximately 1 to 1 1/2 inches from both ends of the wire run.
3. Using a wire-wrap tool, wire-wrap the "+", "–" and drain wires to the "+", "–" and ground terminal pins of connector P14, CLK-OUT, on the top of the backplane.
4. Run the wire from P14 on the "source" shelf to connector P14, CLK IN, on the receiving shelf (See **Figure 4**).
5. Wire-wrap the "+", "–" of the wire run to the "+", "–" terminals of P14 on the receiving shelf.
6. At SW1 of the receiving shelf, mounted to the left of P14, move the switch right to the "OUT" position.
7. Repeat steps 1-6 for each Total Access 1500 shelf that is to be interconnected on the single CO timing source.

NOTE

In any daisy chain of Total Access 1500 shelves using a single timing source, only the first shelf in the chain should have the SW1 switch set to "IN." All the remaining shelves in the chain should have SW1 set to "OUT."

Wiring Test Access

A four-lead (T, R, I, and drain) common test access bus is provided for metallic test access to all customer loops and is labeled P6 on the backplane. If the Total Access 1500 being installed will use these testing features, wiring will be required to gain access to the test leads.

Connect MLT

Metallic Loop test access is gained by wiring into the connector P6, on the right side of the backplane.

The following steps are instructions for wiring the Total Access 1500 for Metallic Loop test access.

1. After you have located the test loops and run them to the Total Access 1500 shelf, use wire strippers to strip approximately 1 to 1 1/2 inches from the test leads.
2. Using the wire-wrap tool, wire-wrap the central office "T" and "R" leads to the Total Access 1500 "R" and "T" pins, respectively, on terminal P6.
3. Wire-wrap the inhibit wire of the cable to the top pin labeled "I" on P6.
4. Wire-wrap the drain wire of the cable to the bottom pin labeled ground on P6.
5. Neatly tie down the test cable pair.

Alarm Connections

Alarming is dependent on how the Total Access 1500 system is configured. When the Total Access 1500 is configured as a channel bank using a single or dual T1 feed, the alarm outputs should be represented by VMJ(Visual Major), VMN(Visual Minor), AMJ(Audible Major), AMN(Audible Minor), AUX(Auxiliary) and -48. However, if the Total Access 1500 bank is configured as a DLC using quad T1 feed, the alarm outputs should be represented by T1A(A Digroup Major), T1B(B Digroup Major), T1C(C Digroup Major), T1D(D Digroup Major), BANK(Bank System Major), and -48. In the DLC mode, the Total Access 1500 separately monitors the performance of each digroup (A, B, C and D) and the bank. The DLC mode assures that an alarm at the digroup level provides appropriate central office and remote information.

The Total Access 1500 provides standard bank alarm outputs. Each of the alarms listed below consists of a three-pin wire-wrap header that connects to the SCU for alarm management. The SCU provides the necessary electronic circuits for a NO/COM/NC contact arrangement. The alarms are:

- Major-Visual Output
- Minor-Visual Output
- Major-Audible Output
- Minor-Audible Output
- AUX Output
- ACO Alarm Input

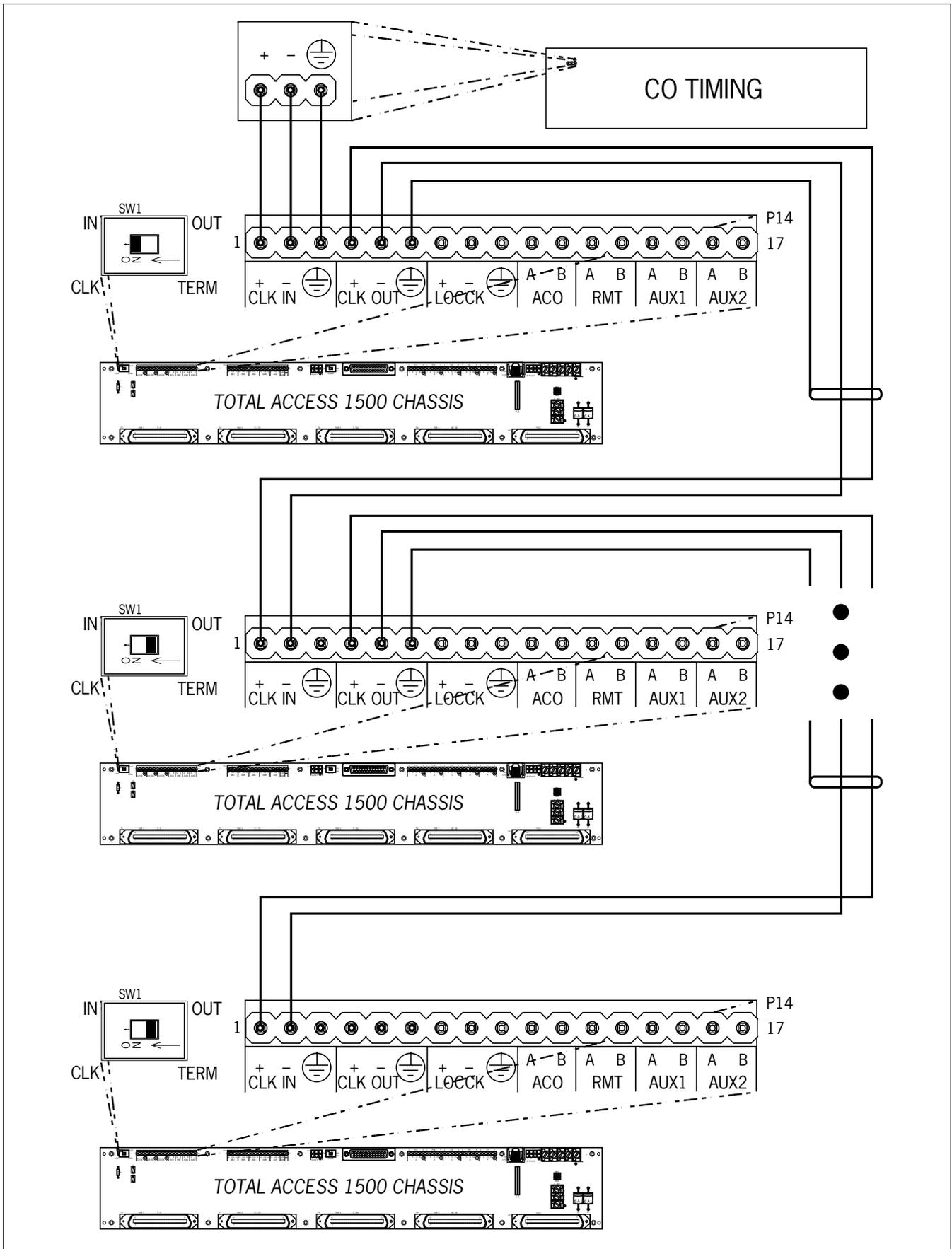The alarming configuration is selected as an LIU option through the VT100 craft interface.

Figure 4. Composite Clock Wiring

Connecting Alarm Outputs

Depending on the vendor equipment employed at the CO, wiring external alarms from the Total Access 1500 shelf will vary slightly. The important consideration is whether the external alarm equipment requires a Normally Open (NO) or Normally Closed (NC) circuit to pass an alarm. After determining what the CO equipment requires, connection can be made to the equipment from the Total Access 1500 shelf, see **Figure 5** for location of alarm contacts. The following steps are instructions for connecting alarm outputs to the Total Access 1500.
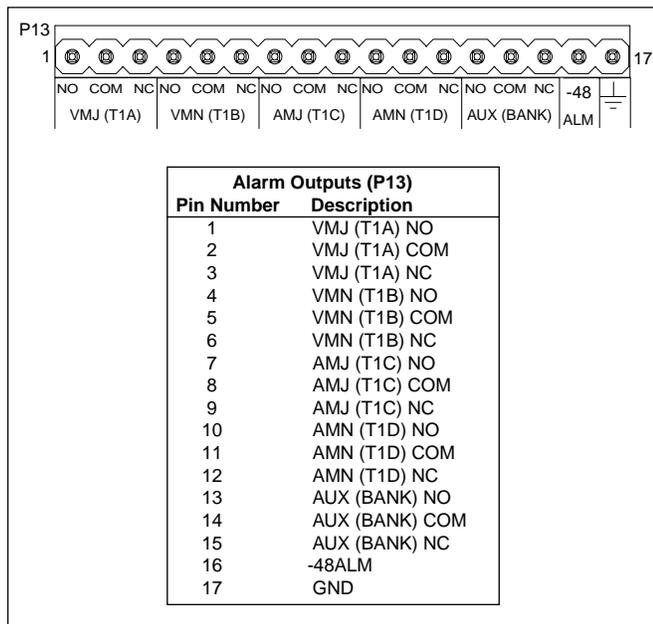

Alarm Outputs (P13)	
Pin Number	Description
1	VMJ (T1A) NO
2	VMJ (T1A) COM
3	VMJ (T1A) NC
4	VMN (T1B) NO
5	VMN (T1B) COM
6	VMN (T1B) NC
7	AMJ (T1C) NO
8	AMJ (T1C) COM
9	AMJ (T1C) NC
10	AMN (T1D) NO
11	AMN (T1D) COM
12	AMN (T1D) NC
13	AUX (BANK) NO
14	AUX (BANK) COM
15	AUX (BANK) NC
16	-48ALM
17	GND

Figure 5. Alarm Contacts

NOTE

Each three-pin alarm header is wired the same way for the specified alarm.

1. Determine whether the external alarm reporting device uses a normally open or normally closed circuit for alarm relay.
2. Using standard telco cross connect wire, determine and cut the length required to reach from the alarm headers to the alarm-reporting device.
3. Using wire strippers, strip 1 to 2 inches from both ends of the wire.
4. Using a wire-wrap gun, wire-wrap one strand to the center pin (common) from the Total Access alarm relay header, and the other strand to either the "NO" (normally open) or "NC" (normally closed) pin on the relay header.

5. Connect, using wire-wrap or lugs, as appropriate, the two wires to the appropriate terminals on the external alarm relay device being used.

Connecting Miscellaneous Alarm Inputs

There are four external alarm inputs that can be reported to the SCU on the Total Access 1500 shelf. These are marked ACO, RMT, AUX and AUX2, see Figure 5. Terminal B supplies a -48 Vdc source. Terminal A expects -48 Vdc if an alarm condition exists on the alarmed equipment.

The following steps should be used to connect an external alarm input to the shelf:

1. Using a #1 Phillips-head screwdriver, remove the long, thin metal guard if it is not already off.
2. Choose an alarm header set from block, P14, on the top of the Total Access 1500 backplane.
3. Using standard telco cross connect wire, determine and cut the length required to reach from the alarmed piece of equipment to the header you chose. Allow length for 1 to 2 inches of stripped wire for wire-wrap, and neat routing out from the Total Access 1500 shelf.
4. Using wire strippers, strip 1 to 2 inches from both ends of the wire.

NOTE

Omit step 5 if the alarmed piece of equipment has its own source of -48 Vdc and does not need the -48 Vdc feed from the Total Access 1500 shelf. The Total Access 1500 shelf expects to see -48 Vdc on pin A of the alarm pair when an alarm condition exists.

5. Using a wire-wrap gun, wire-wrap one wire to the B pin of the Total Access 1500 AUX1 header (P14), and the other end to the alarmed unit alarm terminal marked "B."
6. Wire-wrap one end of the second wire to the A pin of the Total Access 1500 alarm header (P14) and the other end to the appropriate equipment alarm terminal.
7. Using a #1 Phillips-head screwdriver, replace the long thin metal guard using the screws provided.

NOTE

Check with the equipment manufacturer for exact alarm markings.

Network Management Connections

The Total Access 1500 shelf integrates onto the backplane several different management ports to allow for remote management of the shelf. The management interface is on the System Controller Unit (SCU) discussed in detail in the System Description section of the Total Access 1500 System Manual.

Up to 16 shelves can be linked together on the RS-485 bus for management of those shelves from a single management interface.

SW2, located in the upper center of the Total Access 1500, is used to enable/disable RS-485. There is also a 3-position wire-wrap header, P12, for the RS-485 interface.

Connecting the RS-485 Bus Between Shelves

Up to 16 shelves can be linked together for management from a single shelf designated as host (the other shelves will be configured as clients). This feature allows conservation of valuable external management ports within the CO, and provides local or remote management for up to 16 shelves from the craft interface on front of the host SCU, or from the remote management port connections described in this section. The following steps are instructions for connecting the RS-485 bus between shelves.

1. Determine and cut the length of wire necessary to reach from the RS-485 wire-wrap header, P12, in the first shelf in the chain to the RS-485 wire-wrap header, P12, in the second shelf. Remember to allow for stripping the ends of the wire, routing the wires out to the right side of the shelf to the frame, and tying down in accordance with CO SOP.

2. Using the wire-wrap tool, connect the shielded, twisted pair interconnect wire to the RS-485 wire-wrap header, P12, on the host Total Access 1500 backplane. (See **Figure 6**).

3. Run the interconnect wire to the backplane of the first client shelf. Using the wire-wrap tool, connect the two conductors and ground of the interconnect wiring to the RS-485 wire-wrap header, P12, on the backplane of the client shelf. (See Figure 6)

If there are more shelves to be connected, repeat steps 1 through 3 for each shelf to be added to the chain. Each shelf after the first will be a client shelf on the daisy chain. It is important to note that there is only one shelf designated as host on any daisy chain of up to 16 shelves.

RS-232 SCU Comm Port

The Total Access 1500 can send and receive TL1 commands for NMA management over the X.25 packet switched network. The Total Access 1500 SCU has a built-in X.25 PAD, and the shelf is ready to connect to the network. Access to the network is via an RS-232 connector, J34, located in the upper middle of the backplane. The following steps are instructions for connecting the X.25 to the Total Access 1500.

1. Connect the DB-25 data cable male connector to the NTWK MGMT port, J34, on the Total Access 1500 backplane.
2. Connect the other end of the data cable to the designated port of the X.25 switch.

NOTE

The CO X.25 network administrator must configure the X.25 switch for the Total Access 1500 shelf, accomplishing tasks such as assignment of an LDN number for the shelf.

Connect 10BaseT

The Total Access 1500 can provide SNMP management capability over Ethernet. Access to the network is via a RJ-45 10BaseT connector, J33, labeled "Ethernet," located on the upper right side of the backplane.

To connect the Total Access 1500 shelf to the Ethernet ring, simply plug the male RJ-45 modular connector into the female RJ-45 port on the Total Access 1500 backplane. When planning your cable run to the Total Access 1500 shelf, be sure to allow enough cable for routing the cable to the right from the backplane connector to the frame, and for neat tie-off in accordance with CO SOP.

Connect to Pair Gain Test Controller (PGTC)

Use a straight through 50-pin Amp cable to connect the Pair Gain Test controller to the PGTC interface (P5) of the Total Access 1500. P5 accepts a female connector.
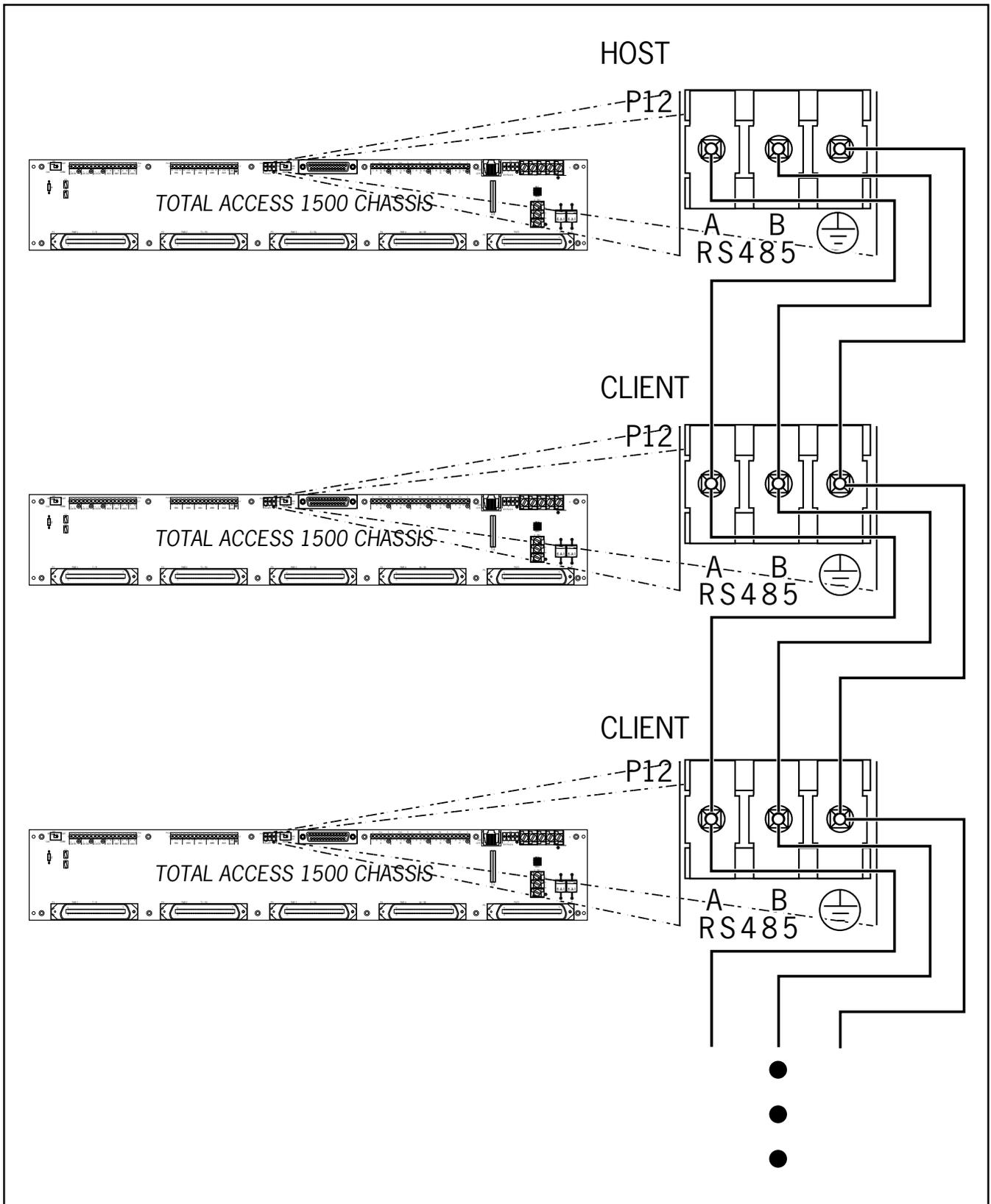
Figure 6. RS-485 Wiring

Specifications

The specifications for the Total Access 1500 Chassis can be found in **Table 2**.

Table 2. Total Access 1500 Specifications

Power Requirements	
Environmental	
Input DC Voltage:	-42 to -56 VDC
DC Voltage nominal:	-48 VDC
Maximum Current:	(5 Amp fused)

Environmental	
Operating Temperature:	-40º to +65º C
Storage Temperature:	-40º to +85º C
Relative Humidity:	95% maximum, non-condensing

Physical	
Dimensions:	23" W x 3 1/2" H x 12" D
Weight (fully loaded):	20 lbs
(empty):	11 lbs

TA 1500 Relevant Part Numbers	
TA 1500 Chassis:	1180001L1, Practice: 61180001L1-5
SCU:	1180008L1, Practice: 61180008L1-5
SCU COT w/MLT:	1180008L2, Practice: 61180008L2-5
SCU RT w/MLT:	1180008L3, Practice: 61180008L3-5
PSU/INT RG:	1180007L1, Practice: 61180007L1-5
PSU/EXT RG:	1180007L2, Practice: 61180007L2-5
LIU-4+P:	1180109L1, Practice: 61180109L1-5
FXS/DPO/PLAR:	1180403L1, Practice: 61180403L1-5
FXO/DPT:	1180404L1, Practice: 61180404L1-5
E&M/TO:	1180402L1, Practice: 61180402L1-5
OCU-DP:	1180005L1, Practice: 61180005L1-5
DSO-DP:	1180003L1, Practice: 61180003L1-5
U-BR1TE:	1180020L1, Practice: 61180020L1-5
Dual DS0 DP:	1180203L2, Practice: 61180203L2-5
Dual OCU DP:	1180205L2, Practice: 61180205L2-5
Dual FXO/DPT:	1180207L2, Practice: 61180207L2-5
Dual FXS/DPO/PLAR:	1180208L2, Practice: 61180208L2-5
Quad R-POTS:	1180408L1, Practice: 61180408L1-5
Test Access Card:	1180006L1, Practice: 61180006L1-5
Quad FXO CPOTS:	1175407L1, Practice: 61175407L1-5

Cable Assembly Part Numbers	
Cable Asy., 4x50 pin to 100-pr, 25'	1180011L25
Cable Asy., 4x50 pin to 100-pr, 50'	1180011L50
Cable Asy., 4x50 pin to 100-pr, 100'	1180011L100
Cable Asy., 4x50 pin to 100-pr, 200'	1180011L200
Cable Asy., 4x50 pin to 100-pr, 300'	1180011L300

3. MAINTENANCE

The Total Access 1500 Chassis does not require programmed maintenance for design 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.

4. WARRANTY AND CUSTOMER SERVICE

ADTRAN will replace or repair this product within 10 years from the date of shipment if it does not meet its published specifications or fails while in service (see: ADTRAN *Carrier Networks Equipment Warranty, Repair, and Return Policy and Procedure,* document: 60000087-10).

Contact Customer and Product Service (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
Presales Applications/Postsales 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