

Total Access 1500 19-Inch Chassis Installation and Maintenance Practice

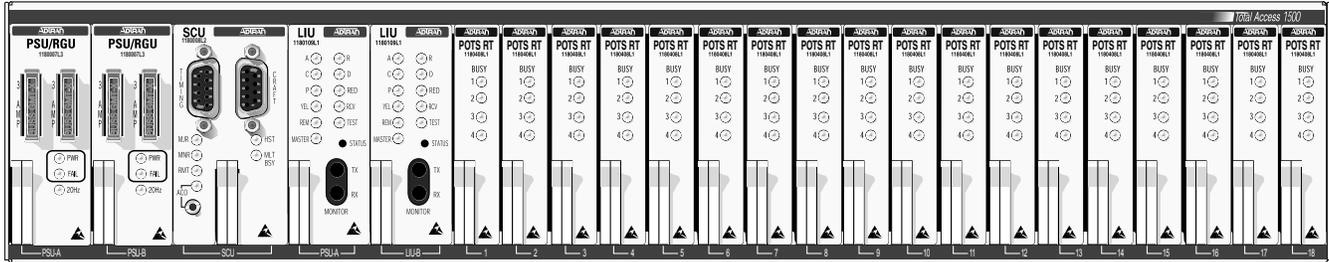


Figure 1. Total Access 1500 19-Inch Chassis

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1. GENERAL

This practice is an installation and maintenance guide for the ADTRAN Total Access 1500® 19-Inch Chassis (P/N 1180019L1). **Figure 1** illustrates the a populated 19-Inch Chassis.

Revision History

This is the initial issue of this practice. Future changes to this documentation will be explained in this subsection.

Features

The basic features of the Total Access 1500 19-Inch Chassis include the following:

- Rackmount design
- Scalable network connectivity
- 1-5 T1 capacity (4 T1s and a Protect T1 for TR-08 applications utilizing a Quad LIU)
- Three common modules:
 - Power Supply/Ring Generator Unit (PSU/RGU)
 - System Controller Unit (SCU)
 - Line Interface Unit (LIU)
- T1 Network Interface
- 18 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, 2, and 3)
- Supports Mechanized Loop Testing (MLT)
- NRTL Safety Listed and FCC compliant
- Meets NEBS Level 3 requirements

Description

The Total Access 1500 19-Inch Chassis is designed to meet a variety of operating configurations and services, such as POTS and Special Services. The Total Access 1500 19-Inch Chassis is intended for use in Central Office (CO), Remote Terminal (RT), and customer premises applications. The Total Access 1500 System is comprised of the chassis, common modules, and access modules.

The Total Access 1500 19-Inch Chassis is 19-inches wide by 3.50-inches high by 10.75 inches deep, and the chassis mounts in a standard 19 or 23-inch wide rack. The Total Access 1500 19-Inch Chassis and is made of heavy gauge metal.

Common Modules

The common modules supported by the Total Access 1500 19-Inch Chassis are described below.

PSU/RGU

The Power Supply Unit/Ring Generator Unit (PSU/RGU) receives -48 VDC from an external source to provide all necessary voltages required by the other common modules and channel units. Two PSU/RGUs may be installed to provide fully redundant operation. Through switch mode operation, either PSU converts the incoming -48 VDC to regulated +3.3 VDC, +5 VDC, and unregulated -7.5 VDC, -24 VDC, and -48 VDC for distribution to the other modules. Ring voltage circuitry within the PSU generates 105 Vrms nominal, 20 Hz ring voltage for distribution to the channel bank's voice modules. Ring voltage is disabled by removing the 5-amp GMT front panel fuse labeled **20Hz**. The PSU/RGU does not require provisioning prior to insertion into the channel bank.

CAUTION

The Total Access 1500 19-Inch Chassis requires the use of the List 3 and List 4 PSUs (P/N 1180007L3, 1180007L4).

SCU

The System Controller Unit (SCU) provides network management capability for the channel bank. The SCU is used to provision, test, and determine status for any module in the channel bank. It is also available in Central Office Terminal (COT) and Remote Terminal (RT) versions with Mechanized Loop Testing. The front panel has craft interface, test equipment timing output, alarm and status indicators, plus an Alarm Cut-Off (ACO) switch.

LIU

The Line Interface Unit (LIU) terminates up to four T1 lines, with a separate T1 that is included for protection switching with the Quad LIU or two T1 lines with the Dual LIU. The LIU generates control signals and clocks used by the channel units, and controls both manual and remotely initiated T1 loopbacks. It detects alarm conditions and reports the alarm status to the SCU.

The LIU front panel has a dual bantam jack for T1 test access, status LEDs, and a **STATUS** pushbutton.

WARNING

If two (redundant mode) List 2 Quad LIUs (P/N 1180109L2) are utilized in the Total Access 1500 19-Inch Chassis, the T1 (DSX-1) interfaces *must not* be metallically connected to interfaces that connect to the Outside Plant or its wiring. These interfaces are designed for use as intra-building interfaces only. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

It is permissible to connect the T1 (DS-1) interface metallically to the OSP if only one LIU (non-redundant mode) is to be used at any time in the Total Access 1500 19-Inch Chassis.

Access Modules

The Total Access 1500 System incorporates a complete array of local loop access technologies into an integrated intelligence system. Most access modules occupy one slot in the Total Access 1500 19-Inch Chassis.

The access modules supported by Total Access 1500 System are listed in the *Total Access 1500 System Manual* (P/N 61180001L1-1). Refer to individual the Installation and Maintenance Practices and Job Aids for detailed information on installation, testing, operation, maintenance, and troubleshooting.

Compliance

Table 1 shows the compliance codes for the Total Access 1500 19-Inch Chassis. The 19-Inch Chassis is NRTL listed to the applicable UL standards. The 19-Inch Chassis is to be installed in a restricted access location and in a Type "B" or "E" enclosure only.

Table 1. Compliance Codes

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

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.

2. INSTALLATION



After unpacking the Total Access 1500 19-Inch Chassis, inspect it for damage. If damage has occurred, file a claim with the carrier, then contact ADTRAN Customer Service. Refer to the [Warranty and Customer Service](#) section for further information. If possible, keep the original shipping container for returning the 19-Inch Chassis for repair or for verification of shipping damage.

NOTE

This product is intended for installation in *restricted access locations* only.

CAUTION

Electronic modules can be damaged by ESD. 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.

WARNING

To prevent electrical shock, do not install equipment in a wet location or during a lightning storm.

Tools Required

The required tools for the Total Access 1500 19-Inch Chassis installation are as follows:

- 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 includes the following:

- Four screws for mounting each Total Access 1500 19-Inch Chassis to the rack
- Shielded 2-wire, twisted pair cross-connect wire with drain, such as AT&T P7 wire
- Insulated wire for power connections
- Insulated wire for frame ground
- Lugs for the power wire and Frame Ground connection

Unpack and Inspect the Chassis

Each Total Access 1500 19-Inch Chassis is shipped in its own cardboard shipping carton unless it was ordered as a fully racked cabinet or wall mount system. Open each carton carefully and avoid cutting too deep into the carton with sharp objects.

Mounting the Chassis

The Total Access 1500 19-Inch Chassis can be flush-mounted or mid-mounted.

Mounting Bracket Orientation

The Total Access 1500 19-Inch Chassis comes with mounting brackets that can be mounted with the flanges facing forward or backward in two different locations on the chassis sides. This allows the chassis to be flush-mounted or mid-mounted. Attaching the mounting brackets to the chassis requires three screws on each side that are supplied with the unit.

The mounting brackets can be used for 19 or 23-inch rack applications:

- The narrow side should be screwed to the chassis for a 23-inch rack.
- The wide side should be screwed to the chassis for a 19-inch rack

The recommended ways to mount the chassis are as follows:

- Flush-mount: To flush-mount a Total Access 1500 19-Inch Chassis in the rack, use a #2 phillips-head screwdriver and attach the mounting brackets (see [Figure 2](#)) with the flanges containing the slotted rack-mounting holes facing the front of the Total Access 1500 19-Inch Chassis. The mounting brackets should be attached using the set of mounting bracket holes closest to the rear of the Total Access 1500 19-Inch Chassis.

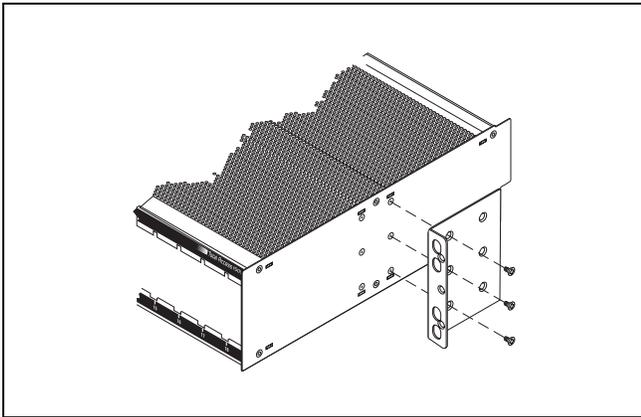


Figure 2. Flush-Mount Bracket Orientation

- Mid-mount: To mid-mount a Total Access 1500 19-Inch Chassis in the rack, use a #2 phillips-head screwdriver and attach the mounting brackets (see [Figure 3](#)) with the flanges containing the slotted rack-mounting holes facing the rear of the Total Access 1500 19-Inch Chassis. The mounting brackets should be attached using the set of mounting bracket holes closest to the front of the Total Access 1500 19-Inch Chassis.

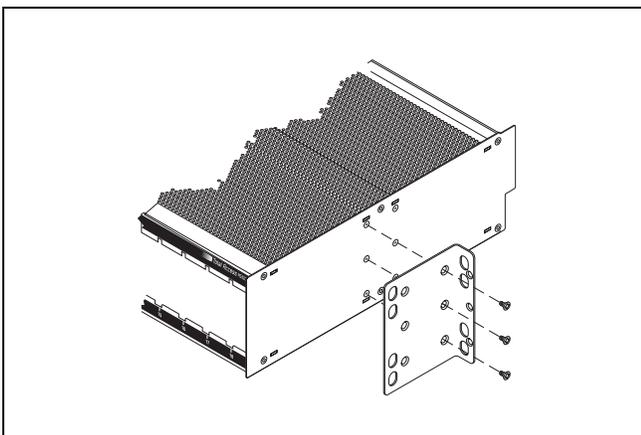


Figure 3. Mid-Mount Bracket Orientation

Installing the Chassis

After attaching the mounting brackets to the Total Access 1500 19-Inch Chassis sides, use the appropriate screws for the CO rack type and mount the chassis in the rack as follows:

1. Flush-mount: For flush-mount systems, the Total Access 1500 19-Inch Chassis 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 19-Inch Chassis 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 the CO.

Once the orientation of the chassis has been determined, use the four appropriate screws for the CO rack and an appropriate screwdriver and secure the Total Access 1500 19-Inch Chassis in place on the rack.

Connections

Interconnections between the common modules and channel units are accomplished through the backplane PCB. All external connections to the Total Access 1500 19-Inch Chassis 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.

CAUTION

Per *GR-1089-CORE October 2002, section 9*, this 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.

All permanent connections to the Total Access 1500 19-Inch Chassis are made on the backplane. **Figure 4** is a detailed diagram of the power and ground connectors, and **Figure 5** is an illustration of the backplane and pinouts.

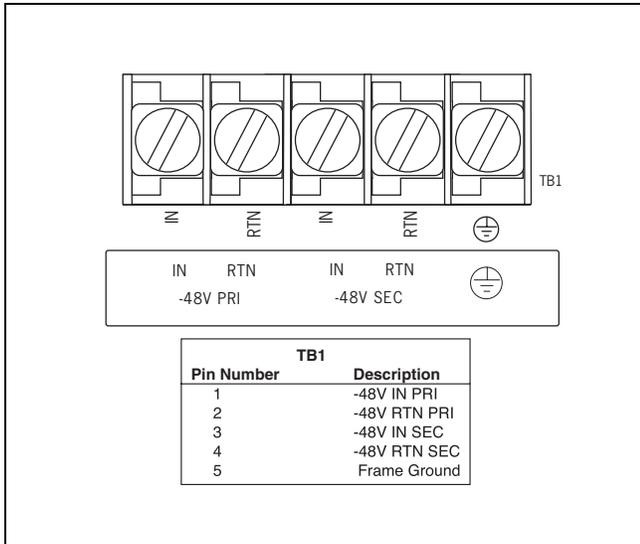


Figure 4. Power and Ground Connectors

Frame Ground Connection

The frame ground terminal, located on the upper right corner of the backplane (see **Figure 4** and **Figure 5**), 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 19-Inch Chassis, perform the following steps:

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 19-Inch Chassis ground terminal on **TB1** 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 an ohmmeter set to its the lowest resistance range, place one lead on the rack's ground strap and the other lead on the Total Access 1500 19-Inch Chassis ground terminal on **TB1**. 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 rackmount 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 4** and **Figure 5**). The terminals are on 0.375 inch centers and allow for wire gauges up to 12 AWG. The frame ground terminal routes to mechanical contact points and provides an electrical connection to the chassis metalwork. The power bus and frame ground route to all the modules in the chassis.

The number of Total Access 1500 19-Inch Chassis that can be placed in a 7-foot CO rack depends on the type of service deployed and the number of access modules in the chassis.

After connecting and checking the ground to the Total Access 1500 19-Inch Chassis, connect power to the chassis. Check to make sure the power source is providing the correct power and polarity to the Total Access 1500 19-Inch Chassis. The following steps provide instructions on how to connect power to the chassis.

1. Determine which fuse pairs are to supply power to the Total Access 1500 19-Inch Chassis.
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 19-Inch Chassis.
4. Using the crimping tool, connect an appropriate lug to each end of the wires.

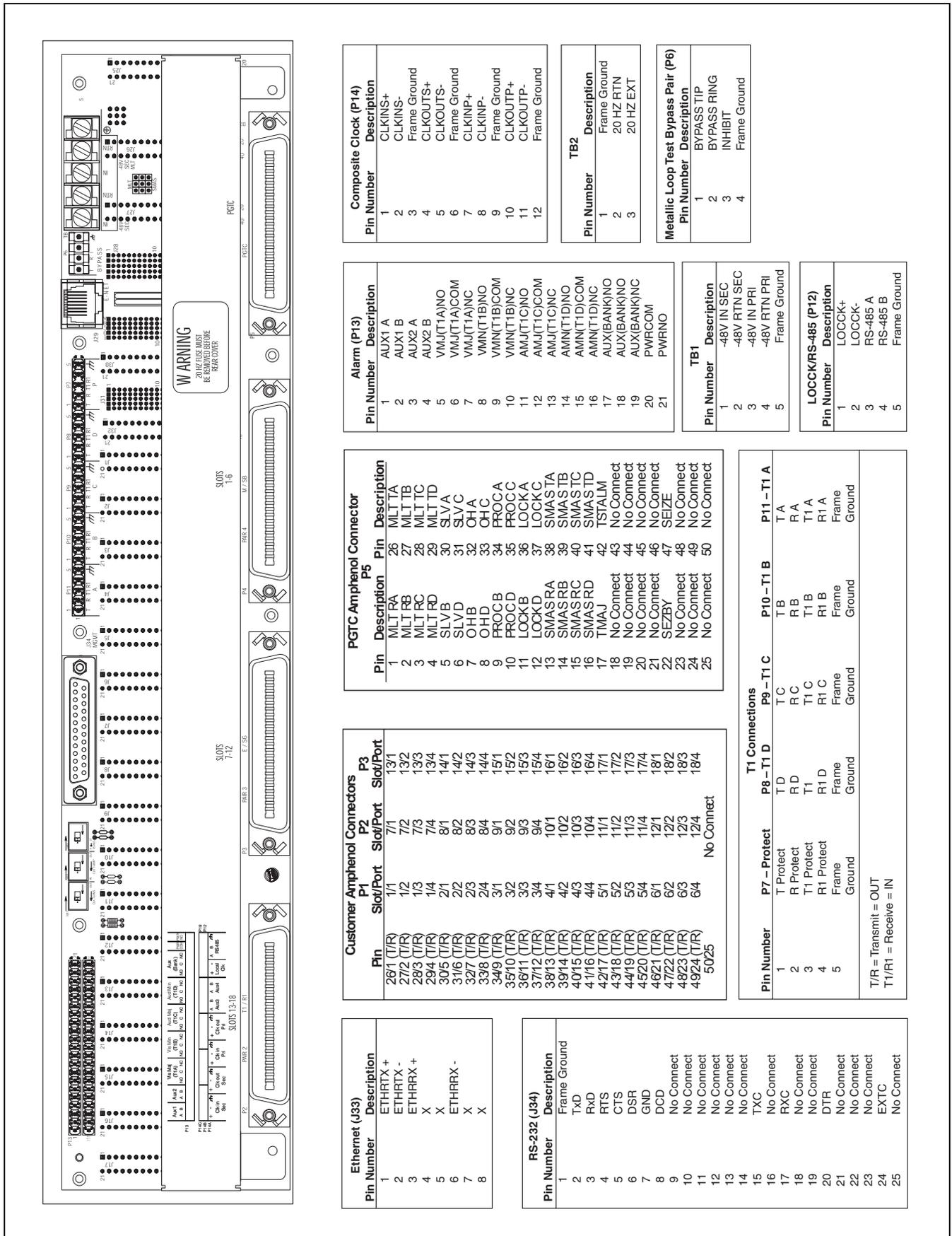


Figure 5. Backplane and Pinouts

- Using a screwdriver appropriate for the fuse and alarm panel terminals, and a straight slot or phillips screwdriver for the Total Access 1500 19-Inch Chassis power terminal, connect the ends of one wire between the “A” CO –48 VDC supply and the **–48V PRI IN** terminal on the Total Access 1500 19-Inch Chassis backplane.
- Connect three more power wires, connecting the “A” CO –48 VDC return with **–48V PRI RTN**; “B” CO –48 VDC supply with **–48V SEC IN**; and “B” CO –48 VDC RTN with **–48V SEC RTN**.

Apply Power and Check Voltage

Before proceeding further, ensure that power has been correctly applied to the Total Access 1500 19-Inch Chassis. The proper voltage to the Total Access 1500 19-Inch Chassis 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 Total Access 1500 19-Inch Chassis. There will be power to pins on the backplane and inside the Total Access 1500 19-Inch Chassis. Exercise caution to avoid electric shock.

NOTE

The Total Access 1500 19-Inch Chassis may be powered by multiple power sources. Disconnect all sources prior to servicing.

NOTE

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

- Install appropriate fuses (5 amp max) in the slots in the fuse and alarm panel that services the Total Access 1500 19-Inch Chassis.
- Using a voltmeter, place the common (normally black) lead on the **TB1 –48V PRI RTN** terminal and the DC volts (normally red) lead on the **TB1 –48V PRI 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 “negative” polarity.

- Using a voltmeter, test the connection using the **TB1 –48V SEC RTN** terminal and the **TB1 –48V SEC IN** terminal.
- Remove the fuses from the fuse and alarm panel slots that provide power to the Total Access 1500 19-Inch Chassis.

Ring Generator

The Total Access 1500 System operates with either an internal or external ring generator. For external ring generator applications, **TB2** (see [Figure 6](#)) provides terminal connections for ringing voltage, ringing return, and frame ground.

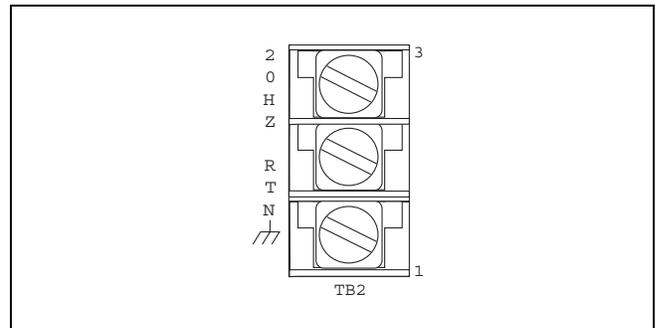


Figure 6. Ring Generator Terminal

Composite Clock Connections

An external composite clock input is required in the COT when deploying digital services from the Total Access 1500 System. The following steps provide instruction on how to connect primary and secondary external composite clock signals to a single Total Access 1500 19-Inch Chassis.

- Determine the “+”, “–” and drain or ground wires from the CO clock source.
- 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.
- Using the wire-wrap tool, wire wrap the “+” wire from the clock source to the pin marked + on connector **P14, Clk in Pri**.
- Wire wrap the “–” wire from the clock source to the pin marked – on connector **P14, Clk in Pri**.
- Wire wrap the drain or shield wire from the clock source to the pin marked as ground on connector **P14, Clk in Pri**.

6. Tie the clock source wire neatly to the frame.
7. Set **SW3** to the **IN** position (**SW3** is the center switch in the three switch cluster located to the right of **P14**).
8. Repeat steps 1 through 6 for secondary clock to connector **P14**, **Clk in Sec** (optional).

9. Set **SW1** to the **IN** position (**SW1** is the left-most switch in the three switch cluster located to the right of **P14**).

Figure 7 illustrates the connections to a Total Access 1500 19-Inch Chassis utilizing external redundant timing.

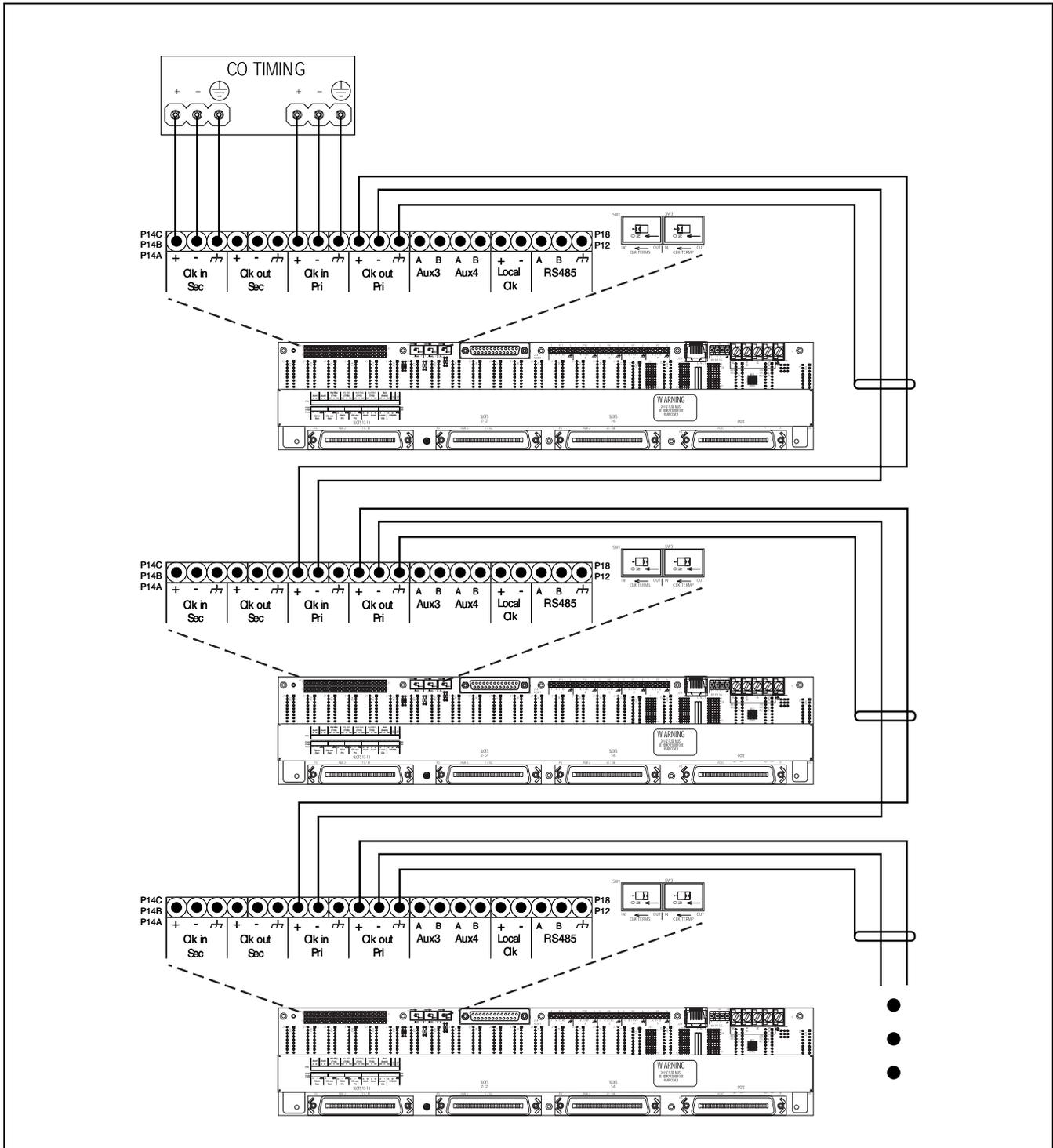


Figure 7. Daisy-Chained Composite Clock Wiring

Up to 14 dual LIU systems or 28 single LIU systems may be daisy chained to a single output from the timing source. This results in a requirement for only one wire run from the timing source for an installation of up to 14 or 28 Total Access 1500 shelves. Use wire of the same type as the wire run from the CO clock source to the Total Access 1500 19-Inch Chassis. The following steps provide instructions for connecting multiple Total Access 1500 shelves to a single external timing source.

1. Determine the length of wire required to run from the first chassis, connector **P14**, to the second chassis, connector **P14**. 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 Pri**, on the top of the backplane.
4. Run the wire from **P14** on the “source” chassis to connector **P14**, **Clk in Pri**, on the “receiving” chassis.
5. Wire wrap the “+”, “-” of the wire run to the “+”, “-” terminals of **P14** on the “receiving” chassis.
6. Set **SW3** on the “source” chassis to the **IN** position, and Set **SW3** on the “receiving” chassis to the **OUT** position.

NOTE

In any daisy chain of Total Access 1500 shelves using a single timing source, only the first chassis in the chain should have switch **SW3** set to **IN**. All the remaining chassis in the chain should have **SW3** set to **OUT**.

7. Repeat steps 1 through 6 for each Total Access 1500 shelf that is to be connected to the single CO timing source.
8. Repeat steps 1 through 7 for secondary clock.

NOTE

If connecting the secondary clock source, set **SW1** to the **SW3** settings.

Figure 7 illustrates a daisy-chained composite clock configuration.

Composite Clock Output

Because some applications may require the Total Access 1500 System to provide source timing, an additional connection is provided on **P12** labeled **Local Clk (+, -)** to provide a 64 kHz composite clock output. This output clock can be used as a timing source for up to 14 dual LIU systems or 28 single LIU systems.

Mechanized Loop Testing Connections

A four-lead (T, R, I, and drain) common test access bus is provided for mechanized loop test access to all customer loops, labeled **P6** on the backplane. Instructions for connecting the Total Access 1500 19-Inch Chassis for mechanized loop test access are as follows:

1. After locating the test loops and running them to the Total Access 1500 19-Inch Chassis, 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 19-Inch Chassis **R** and **T** pins, respectively, on terminal **P6**.
3. Wire wrap the inhibit wire of the cable to the pin labeled **I** on **P6**.
4. Wire wrap the drain wire of the cable to the pin labeled ground on **P6**.
5. Neatly tie down the test cable pair.

Alarm Output Connections

Alarm interpretation is dependent on how the Total Access 1500 System is configured. When the system is deployed in a single or dual T1 feed, the SCU should be provisioned for D4 Conventional Alarm Relay Mapping. The alarm outputs will be designated as follows:

- VIS MAJ (Visual Major)
- VIS MIN (Visual Minor)
- AUD MAJ (Audible Major)
- AUD MIN (Audible Minor)
- AUX (Auxiliary)
- PWR

When deployed in a DLC configuration using a quad T1 feed, the SCU can be provisioned for T1 Mapping which provides the following alarm outputs:

- T1A (A Digroup Major)
- T1B (B Digroup Major)
- T1C (C Digroup Major)
- T1D (D Digroup Major)

- BANK (Bank System Major)
- PWR

In the T1 Mapping mode, the Total Access 1500 separately monitors the performance of each digroup (A, B, C and D) and the bank. The T1 Mapping mode assures that an alarm at the digroup level provides appropriate central office and remote information.

The Total Access 1500 19-Inch Chassis 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 as follows:

- Major-Visual Output
- Minor-Visual Output
- Major-Audible Output
- Minor-Audible Output
- AUX Output

The alarm configuration is selected as an SCU option through the VT100 craft interface.

Connecting Alarm Outputs

Depending on the vendor equipment employed at the CO, wiring external alarms from the Total Access 1500 19-Inch Chassis 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 19-Inch Chassis, see **Figure 8** for the location of alarm contacts.

NOTE

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

To connect alarm outputs to the Total Access 1500 19-Inch Chassis, perform the following steps:

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 1-1/2 inches from both ends of the wire.

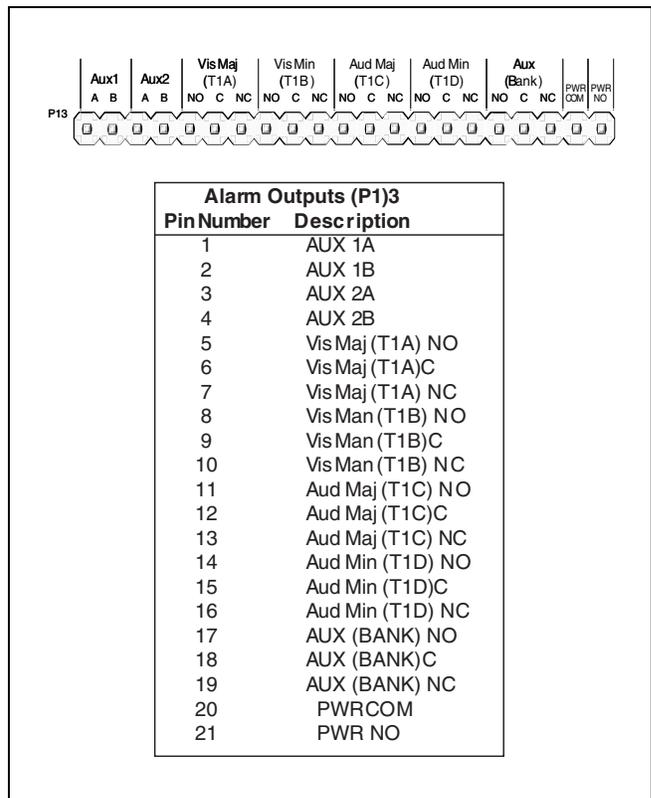


Figure 8. Alarm Contacts

4. Using a wire-wrap gun, wire wrap one strand to the center pin (common) of 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 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 19-Inch Chassis: **Aux1** and **Aux2** located on **P13** and **Aux3** and **Aux4** located on **P18**. Terminal **A** expects –48 VDC if an alarm condition exists on the alarmed equipment. Terminal **B** supplies a –48 VDC source.

To connect an external alarm input to the Total Access 1500 19-Inch Chassis, perform the following steps:

1. Choose an alarm header set from **P13** or **P18** on the Total Access 1500 19-Inch Chassis backplane.
2. Using standard telco cross-connect wire, determine and cut the length required to reach from the alarmed piece of equipment to the chosen header.
3. Using wire strippers, strip 1 to 1-1/2 inches of insulation from both ends of the wire.

NOTE

Omit step 4 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 19-Inch Chassis. The Total Access 1500 19-Inch Chassis expects to see –48 VDC on pin A of the alarm pair when an alarm condition exists.

- Using a wire-wrap gun, wire wrap one wire to the **B** pin of the Total Access 1500 alarm input header, and the other end to the external unit alarm terminal marked “B”.
- Wire wrap one end of the second wire to the **A** pin of the Total Access 1500 alarm input header and the other end to the external unit alarm terminal marked “A”.

NOTE

Check with the manufacturer of the external equipment for exact alarm nomenclature.

Network Connections

The Total Access 1500 System supports either DS1 or DSX-1 network connections. The copper pair network interface connects to the backplane at wire-wrap connectors **P7**, **P8**, **P9**, **P10**, and **P11**.

Network Management Connections

The Total Access 1500 19-Inch Chassis integrates several different management ports on the backplane to allow for remote management of the chassis. The management interface is on the SCU discussed in detail in the “Section 1, System Description” of the *Total Access 1500 System Manual* (P/N 61180001L1-1).

Up to 32 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 left center of the Total Access 1500 19-Inch Chassis backplane, is used to enable/disable the RS-485 bus. There is also a 3-pin wire-wrap header, **P12**, for connecting to the RS-485 interface.

Connecting the RS-485 Bus Between Shelves

Up to 32 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 32 shelves from the craft interface on front of the host SCU or from the remote management port connections described in this section.

To connect the RS-485 bus between shelves, perform the following steps:

- 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, wire routing, and tying down in accordance with CO SOP.
- 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 9](#)).
- Run the interconnect wire to the backplane of the first client chassis. Connect the two conductors and ground of the interconnect wiring to the RS-485 wire-wrap header, **P12**, on the backplane of the client chassis. (See [Figure 9](#)).
- Enable the RS-485 bus by setting switch **SW2** to the **EN** position.

If there are more shelves to be connected, repeat steps 1 through 4 for each shelf to be added to the chain. Each shelf after the first will be a client shelf on the daisy chain. Only *one* shelf is designated as host on any daisy chain of up to 32 shelves.

RS-232 SCU NMA Management Port

The Total Access 1500 System 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 chassis is ready to connect to the network. Access to the network is via a synchronous 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 System.

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

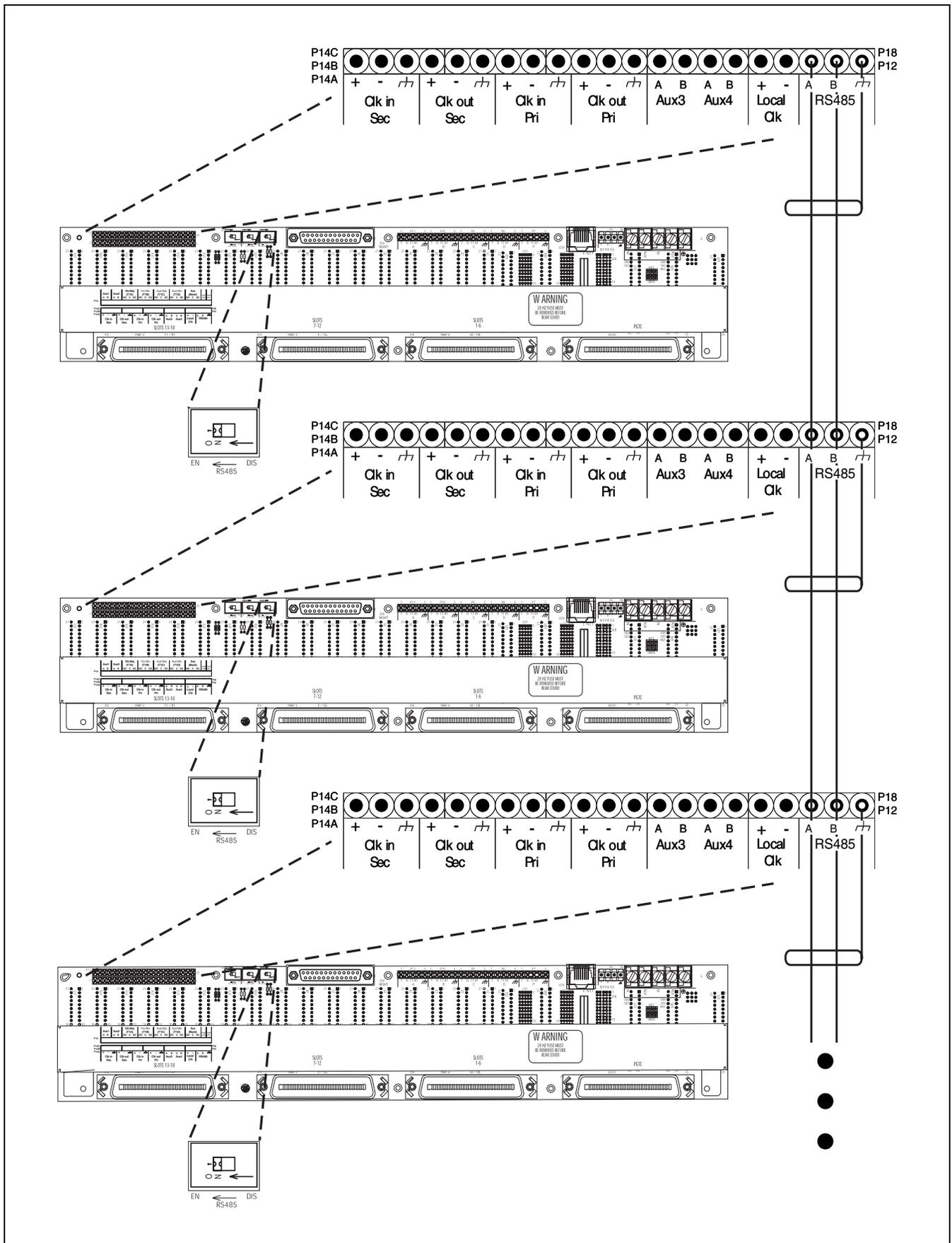


Figure 9. RS-485 Wiring

NOTE

The CO X.25 network administrator must configure the X.25 switch for the Total Access 1500 19-Inch Chassis, accomplishing tasks such as assignment of an LDN number for the chassis.

Connect 10Base-T

The Total Access 1500 System can provide SNMP management capability over an Ethernet. Access to the network is via the RJ-45 10Base-T connector, **J33**, located on the upper right side of the backplane.

WARNING

The 10Base-T Ethernet interface **MUST NOT** be metalically connected to interfaces which connect to the Outside Plant (OSP) or its wiring. This interface is designed for use in intra-building interfaces only. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metalically to OSP wiring.

To connect the Total Access 1500 19-Inch Chassis to the Ethernet ring, simply plug the male RJ-45 modular connector into the female RJ-45 port, **J33**, on the Total Access 1500 19-Inch Chassis backplane. When planning the cable run to the Total Access 1500 19-Inch Chassis, be sure to allow enough cable for routing the cable to the right from the backplane connector to the frame and for tie off in accordance with CO SOP.

There are two provisional items in the SCU: Telnet port and TCP/IP port. Specify the Telnet port to access menus over the Ethernet, and specify the TCP/IP port to issue TL1 commands.

Connect to PairGain Test Controller (PGTC)

Use a straight through 50-pin amp cable to connect the PairGain Test Controller to the PGTC interface (**P5**) of the Total Access 1500 19-Inch Chassis. **P5** accepts a female connector.

3. MAINTENANCE

The Total Access 1500 19-Inch Chassis does not require routine maintenance for normal operation.

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

4. SPECIFICATIONS

Specifications for the Total Access 1500 19-Inch Chassis are detailed in [Table 2](#).

Table 2. Specifications

Power Requirements	
Input DC Voltage:	-42 VDC to -56 VDC
DC Voltage Nominal:	-48 VDC
Maximum Current:	(5-amp fused) on PSU
Environmental	
Operating Temperature:	-40°C to 65°C
Storage Temperature:	-40°C to 85°C
Relative Humidity:	Up to 95% noncondensing
Physical	
Dimensions:	3.50 in. H × 19.00 in. W × 10.75 in. D
Weight fully loaded:	20 lbs.
Weight empty:	10 lbs.
Part Number	
Total Access 1500 19-Inch Chassis:	1180019L1

5. 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 at 877-457-5007.

- Request document 414 for the *U.S. and Canada Carrier Networks Equipment Warranty*.
- Request document 901 for the *U.S. and Canada Enterprise Networks Equipment Warranty*.

Refer to the following subsections for sales, support, 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

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

ADTRAN, Inc.
CAPS Department
901 Explorer Boulevard
Huntsville, Alabama 35806-2807