Total Access® 750 Chassis
Installation and Maintenance

CONTENTS

FIGURES

TABLES

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1. GENERAL

This practice provides installation and maintenance procedures for the ADTRAN Total Access 750 Chassis. **Figure 1** is an illustration of the Total Access 750 Chassis. Part numbers 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 third release of this document. It has been updated to correct amphenol connector pinout.

Features

The Total Access 750 Chassis, P/N 1175001L1, features include the following:

- Wall or rack mount design.
- Terminates a single T1.
- Two common units:
    - Power Supply/Ring Generator (PSU/RGU).
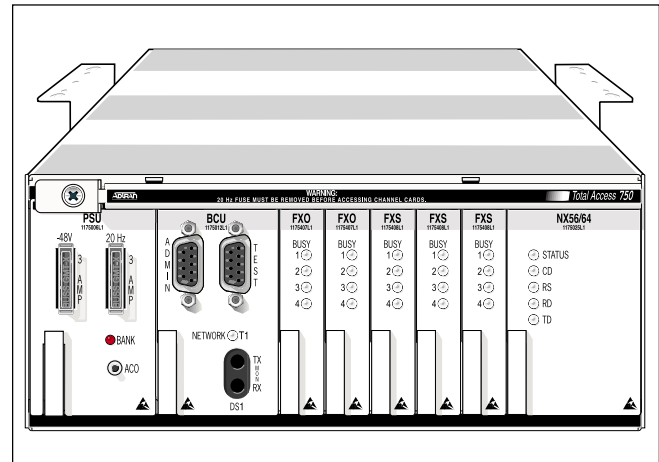   - Bank Controller Unit (BCU).
- Two power inputs available.

Figure 1. Total Access 750 Chassis

- Seven slots for combination of voice and data services.
- Fractional T1 port.
- Programmable V.35 data port.
- Variety of access module units including: Voice, DDS, ISDN, and Nx56/64 DSU DP.
- Optional AC to DC power supply with automatic battery backup.
- Multiple configuration arrangements.
- FCC, and UL 1950 compliant.
- Meets the requirements for NEBS Level 3.

Description

The Total Access 750 Chassis is designed to meet a variety of mounting and operating configurations and services. The Total Access 750 is intended for use in customer premises and remote terminal applications.

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 750 chassis is 8-3/4 inches wide by 3-1/2 inches high by 11 inches deep and is made of heavy gauge metal. The unit mounts to a wall with the installed flanges. A removable rear cover provides access to the backplane and an access panel that mounts to the rear cover allows access to wire-wrap strips P2, P3, and P6, power terminal strip P5, and clock termination switch SW1 without removing the main rear cover.

The chassis can be mounted in a relay rack in the following four configurations:

- Single unit in 19-inch bay.
- Single unit in 23-inch bay.
- Double side by side unit in 19-inch bay.
- Double side by side unit in 23-inch bay.
- * See Table 4 for rack mount brackets.

WARNING

Remove the 20 Hz fuse before exposing backplane or accessing channel units.

Individual access modules insert from the front. A locking bar holds the modules in place for added security. Disengaging a captured screw allows removal of the locking bar. All wiring connections terminate on the backplane. Refer to **Table 1** for backplane reference designator descriptions and functions supported, refer to **Table 2** for wire-wrap connections, and refer to **Figure 2** for backplane layout.

Table 1. Total Access 750 Backplane Connections

Ref Des	Type	Description
T/R	50 pin amphenol	FXO, FXS, OCU-DP, U-BR1TE
P2	wire-wrap strip	Clock/Tests
P3	wire-wrap strip	Alternate T1
DC PWR	DC Power Jack	Primary -48 Vdc In
P5	3-Lug Terminal	Alternate -48 Vdc In
P6	wire-wrap strip	Alarms
FT1	RJ-48	Fractional T1
Management	RJ-48	Not Used
T1	RJ-48	Primary T1 (DSX-1/DS1)
V.35	V.35	Data

Functional Description

The Total Access 750 System is comprised of the chassis, common cards, and access modules. Associated with the system are additional elements including an AC to DC power supply and battery charging unit, and a battery pack for backup power.

WARNING

The Total Access 750 Chassis (1175001L1) can be installed in either a restricted or non-restricted access location, as described within UL 1950 - 3rd Edition / CSA C22.2 No. 950 - 3rd Edition. However, if the chassis is installed in a non-restricted access location, all unused channel slots are required to be populated with blank cards (p/n 1175099L1) in order to comply with the applicable safety requirements. Any modifications to the product or failure to follow these requirements will void the safety certification of the overall product.

EXTERNAL AC AND DC POWER

The ADTRAN AC/DC Power Supply/Battery Charging unit receives its power from a standard 115 Vac outlet. During operation, the power supply maintains -54 Vdc to the PSU/RGU. The power supply battery charging circuit maintains the battery pack at peak charge. In the event of an AC power failure the battery backup circuit automatically provides battery power to the PSU/RGU for up to 8 hours. When AC power is restored, input power automatically returns to the AC supply and the battery charging circuit will recharge the battery to peak.

On the Total Access 750 chassis, the incoming power termination point is on either of two backplane connections: P4 or P5, as seen on Figure 2. Both sources connect directly to the PSU/RGU.

Connector P4 is used when the chassis is powered by the ADTRAN AC/DC Power Supply unit (P/N 1175043L1) which mounts external to the chassis. Connector P5 is used when -48 Vdc is available on site and screw-type terminal connections are desired.

PSU/RGU

The Power Supply Unit/Ring Generator Unit supplies -48 Vdc and 20 Hz ringing voltage to the BCU 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.

Table 2. Wire-Wrap Identification

P2 Wire-Wrap Connections

Pin	Label	Function
External Clock & Test Connections		
1	+ (In)	Input BITS compatible composite clock
2	− (In)	Input BITS compatible composite clock
3	S	Cable shield for input clock
4	+ (Out)	Output BITS compatible composite clock
5	− (Out)	Output BITS compatible composite clock
6	⏚	Ground
7	MLT-A	Metallic Loop Test - A
8	MLT-B	Metallic Loop Test - B

P3 Wire-Wrap Connections

Pin	Label	Function
T1 Alternate Connections		
1	R1	DS1 Ring input from network
2	T1	DS1 Tip input from network
3	R	DS1 Ring output to network
4	T	DS1 Tip output to network
5	Gnd	Ground

P6 Wire-Wrap Connections

Pin	Label	Function
Alarm Connections		
1	-48 ALM	DC Alarm output
2	MJVR	Major Alarm Visual Common
3	MJV	Major Alarm Visual
4	MJR	Major Alarm Audible Common
5	MJ	Major Alarm Audible

The PSU/RGU faceplate shows the following: Two GMT fuses, one for Power and one for 20 Hz Ring Voltage, a channel bank Status LED, and an Alarm Cutoff pushbutton switch (ACO). The separately fused Ring Generator supplies up to 20 REN to the access modules.

BCU

The Bank Controller Unit is a dual board assembly that provides the network interface to the channel bank. The BCU can provision, test, and provide status for any card in the channel bank. The faceplate has two DB-9 connections, a bantam jack connection, plus a network status LED. An 8-position DIP switch is mounted on the main circuit board for provisioning.

ACCESS MODULES

The system is designed to deploy 24 analog voice circuits via six Total Access 750 Quad FXS access modules.

An additional feature is a Total Access 750 Nx56/64 module designed to route data between LAN locations. The Nx56/64 occupies slots 6 and 7. A mix and match versatility allows programming the cards in any T1 quad combination of FXS and Nx56/64 service.

In addition to the Nx56/64 module, other access modules are available to deliver ISDN and DDS services. These modules include the following:

- OCU DP, Office Channel Dataport.
- DS0 DP, Digital Signal Zero Data Port.
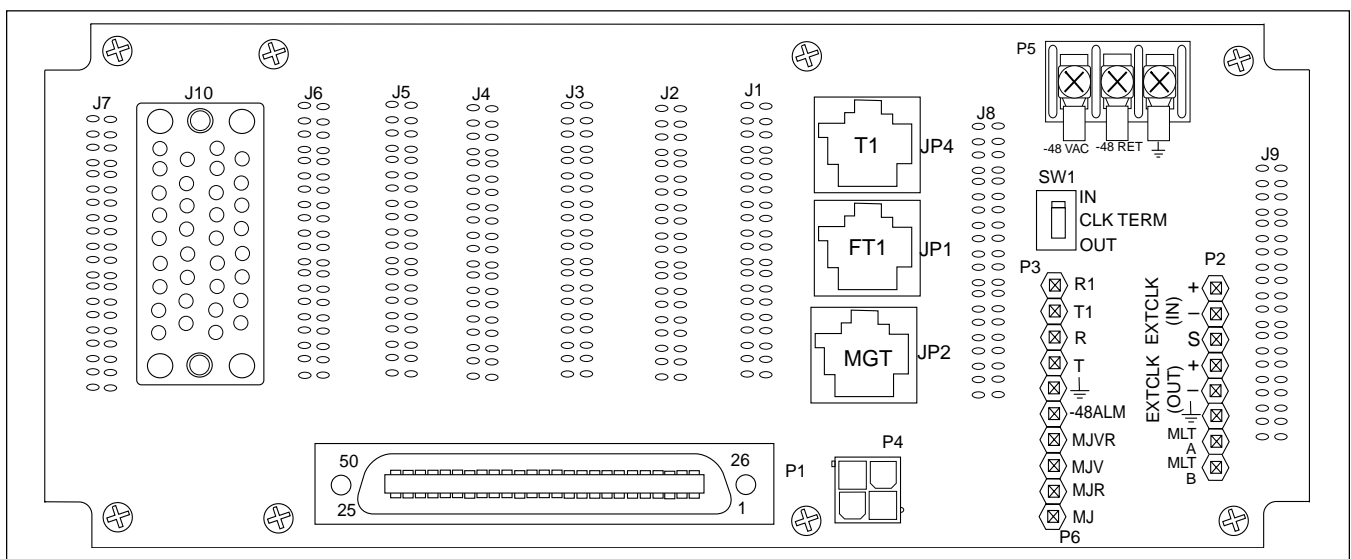- U-BR1TE, U-Interface Basic Rate ISDN Terminal Extension.

Figure 2. Total Access 750 Chassis Backplane

Document part numbers for these units are found in the Specifications Table.

NOTE

Bandwidth is distributed between the Nx56/64 and other access modules totaling 24 DS0 or one T1 as programmed from the BCU.

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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 you note damage, file a claim with the carrier, then contact ADTRAN Customer Service. (See the "*Warranty and Customer Service*" subsection of this practice.)

Standard installation is a single unit wall mount. The chassis must be positioned with the access modules facing up. Mount on heavy plywood, 3/4-inch minimum. Refer to **Figure 3** for component layout.

Compliance Codes
Table 3 shows the Compliance Codes for the Total Access 750 Chassis. The Total Access Chassis is intended to be installed in products providing type "B" or "E" enclosure, and is intended to be installed in restricted access locations only.

Table 3. Compliance Codes

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

Required Clearances
A minimum 10 inches of clearance is required on the front end for access module insertion and withdrawal. On the backplane end, five inches of clearance is required for wiring access to the V.35 connector. For those units installed in a communications bay, standard bay clearances are satisfactory.

Mounting Brackets
The Total Access 750 chassis includes wall mount brackets. If rack mount brackets are needed, please refer to Table 4 for part numbers.

Tools Needed (Wall Mount)
The Total Access 750 Chassis mounts and connects with standard fasteners and hand tools:

- Six #6 x 3/4-inch, flat-head wood screws.
- Drill and drill bit set.
- Flat-head screwdriver (medium).
- Two Phillips-head screw drivers (small /medium)
- Wire-wrap gun (optional).
- 25-pair male amphenol cable (customer connection).
- Selected punch-down block and tool.
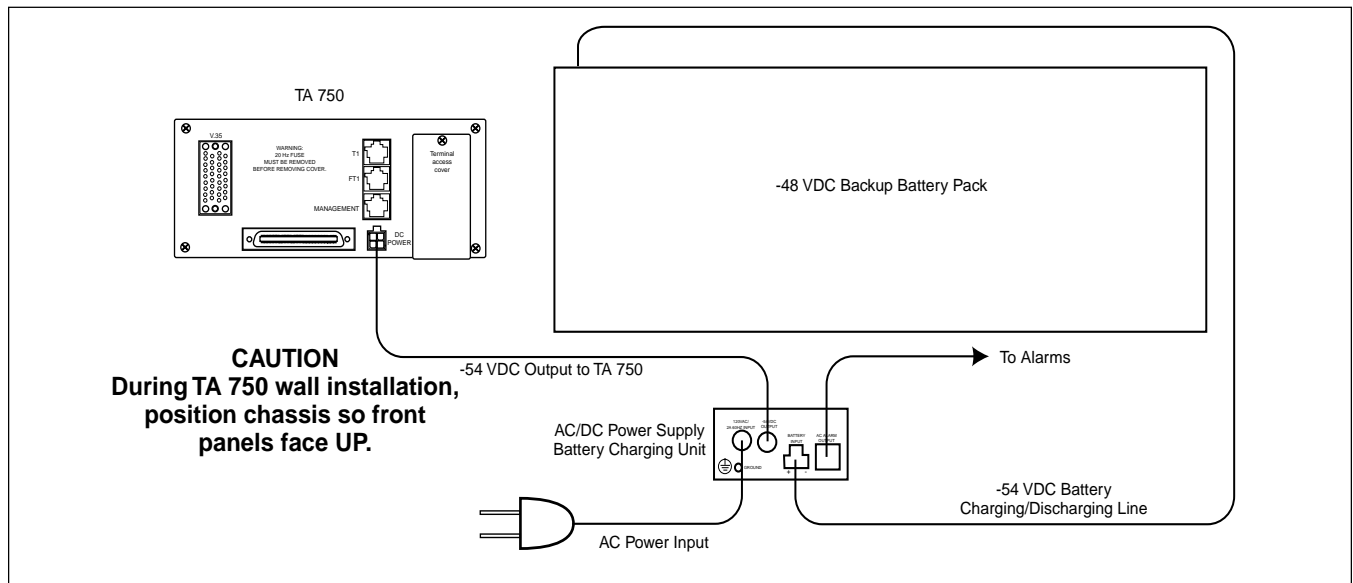- Mounting template (included).

Figure 3. Total Access 750 Component Layout & Cable Connections

Mounting The Chassis

CAUTION
The chassis is designed to be mounted with the front panels facing up and must be oriented in that position.

Install the chassis as follows:

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

Connections
All connections are made through terminals, jacks, and wire-wraps on the backplane. Refer to Figure 2 for backplane connections.

UL Deployment Guidelines
- Connect to a reliably grounded -48 Vdc source which is electrically isolated from the AC source.
- A readily accessible disconnect device, that is suitably approved and rated, shall be incorporated in the input source wiring.
- The branch circuit overcurrent protection shall be a fuse or circuit breaker rated minimum 48 V, maximum 20 A.
- This unit shall be installed in accordance with the requirements of NEC NFPA 70.

CAUTION
Both Power and T1 services have two connection points. In all cases only one of the connection points is used. Adhere to the instructions in the following subsections to ensure correct installation.

Alternate Connections
For wire-wrap or screw terminal connections the rear cover does not need to be removed, only the terminal access cover needs to be removed. Make wire-wrap or screw terminal connections as follows:

1. Unscrew the access cover hold-down screw.
2. Slide the access cover down slightly to disengage the lock-tabs from their slots.

CAUTION
Use wire gauge suitable for the application.

3. Identify the wire-wrap pins designated for use and make the connections starting with the pins closest to the exit port first to avoid wiring interference as work progresses.
4. If alternate power connection to P5 is to be used, make those terminal connections last.
5. Carefully route wiring through the exit port.
6. Position and align the access cover tabs to the slots, insert the tabs and slide the cover up slightly until the screw holes are aligned. Ensure that exit wiring is not pinched or damaged.
7. Reinsert the hold down screw.

CUSTOMER CONNECTION
One 50-pin male amphenol connector (P1) provides the interconnect wiring for the access modules located in slots 1 through 6 of the chassis. This connector is usually terminated with a punch-down block for premises wiring or connected directly to a cross-connect or main distribution frame. **Figure 4** details the connector pinout.

T1 CONNECTION
There are two termination points for connecting the network T1 to the chassis: the Primary RJ-48 connector (JP4), or the Alternate wire-wrap pins on terminal strip P3, as shown in Figure 2. Only one connector type is used, not both.

The BCU common module provides termination for DSX-1 and DS1 signals. For wire-wrap connections, shield is provided by the ground pin adjacent to the DSX-1/DS1 pin set (**Figure 5**). Line build-out and equalization settings are provisioned on the BCU.

The T1 Primary connection is via the RJ-48 connector labeled T1 (JP4). This arrangement provides a convenient T1 connection for those installations where a T1 Smart Jack is used.

POWER CONNECTION
There are two power connections on the backplane: a modular DC plug (P4), and a three lug terminal strip (P5), refer to Figure 2.

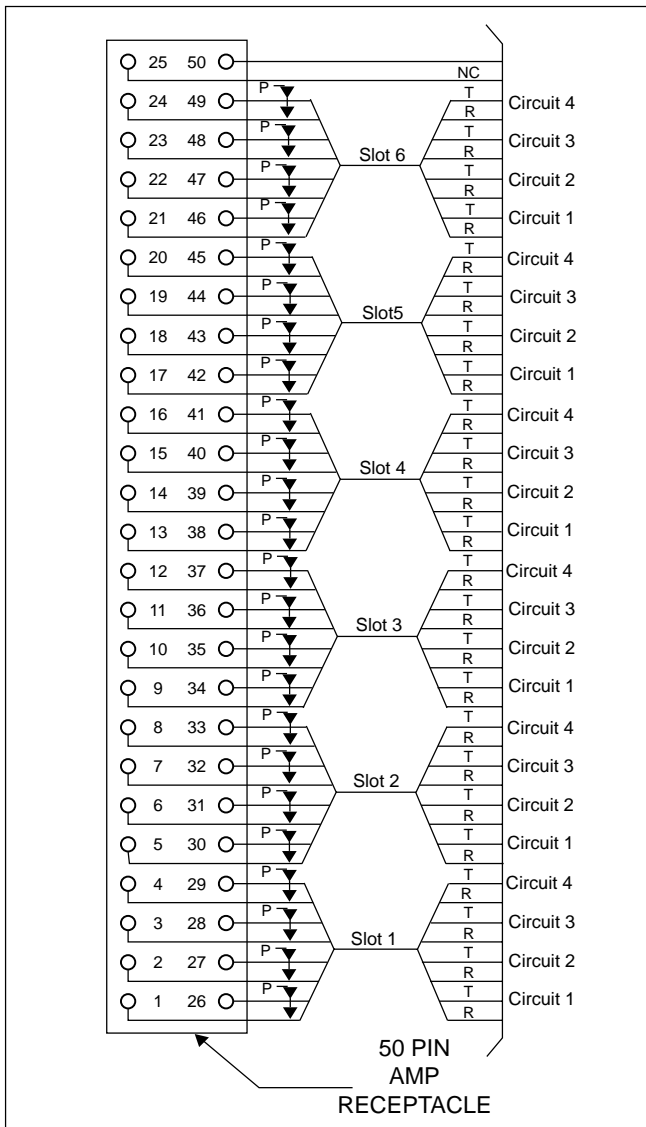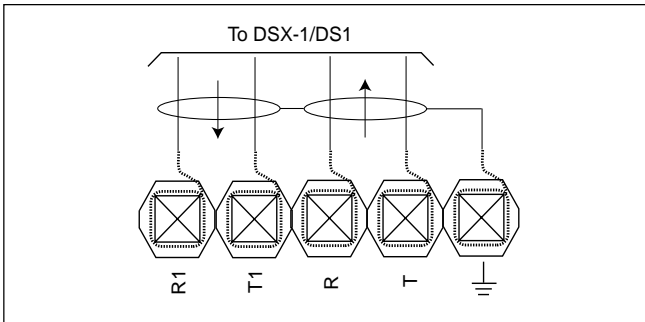**Figure 4. Telco Connector Pinout**

Figure 5. T1 Connections

The primary connection is the modular plug which receives -48 Vdc from the ADTRAN Power Supply/Battery Charging unit (P/N 1175043L1). The alternate connection is screw terminal P5 which can be used if -48 Vdc is available as in central office applications. The screw terminal connection is shown in **Figure 6**.
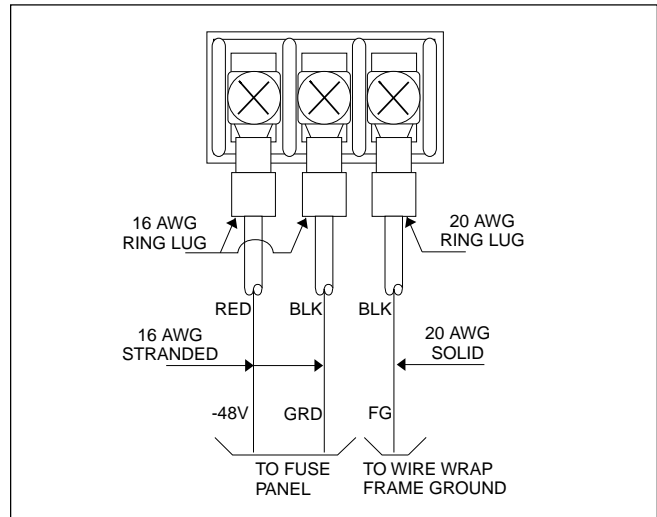

Figure 6. Alternate Power Connection

NOTE

During installation, power should be the last connection made after all other wire-wrap connections are completed.

OFFICE TIMING SUPPLY

Office timing supply pins (EXTCLK IN, + and –) are only used if a local clock source connection is warranted. If the bank is loop timed from the network as provisioned on the BCU, these pins are not used.

Office Timing input and output pins are on wire-wrap strip P2. The incoming Building Integrated Timing Supply (BITS) connects to pins EXTCLK IN + and –. Pin EXTCLK IN S provides shielding for the two inputs. Clock termination switch SW1 is positioned to In on a single shelf installation. Refer to **Figure 7**.

In a daisy chain arrangement, the EXTCLK OUT + and – pins supply clock to the next shelf in the daisy chain where they become the EXTCLK IN + and –. Refer to **Figure 8** for a daisy chain arrangement. The daisy chain process can be repeated for up to a maximum of eight shelves. Clock termination switch SW1 would be positioned to Out on all shelves except the first in the chain where SW1 would be positioned to In.
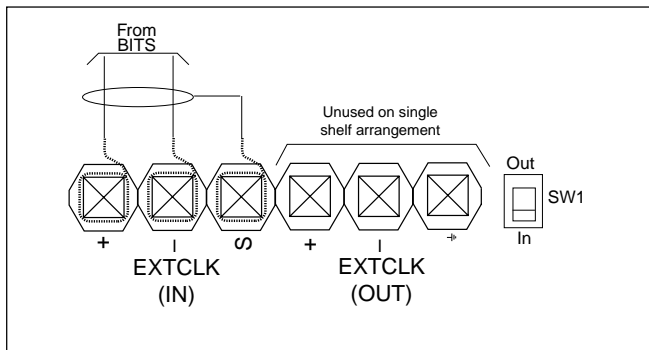
Figure 7. Single Shelf Office Timing Connections

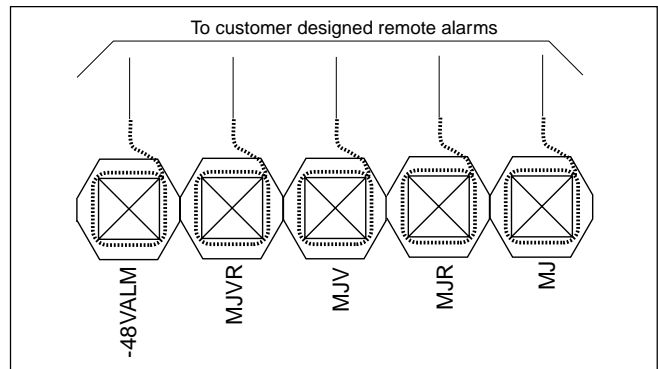**Figure 8. Daisy Chain Office Timing Connections**

Figure 9. Office Alarm Connections

1. MJ will be directly shorted to MJR.
2. MJV will be directly shorted to MJVR.

Contacts MJ and MJR can be manually overridden during an alarm condition by pressing the ACO pushbutton on the PSU faceplate. If the 3-Amp power fuse on the PSU trips, the -48ALM relay will close providing a -48 Vdc signal on that pin. This alarm cannot be overridden by the ACO pushbutton. Refer to **Table 4** for alarm notifications.

Table 4. Alarm Notification

Alarm Condition	Relays Activated		
	MJR	MJVR	-48ALM
Local Alarm	X	X	
Remote Alarm	X	X	
AIS Alarm	X	X	
PSU Power Fuse Fails	X	X	X
Alarms ACO Deactivates	X		
ACO will not deactivate MJR after a power fuse failure.			

3. SPECIFICATIONS

Refer to **Table 5** for specifications and relevant part numbers.

4. MAINTENANCE

The Total Access 750 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.

OFFICE ALARMS

Backplane alarm connections are labeled as shown in Table 2 and illustrated in **Figure 9**. Alarm relay contacts are open during normal operation. The alarm relay contacts close in the event of a local alarm condition or the receipt of an alarm from the T1 carrier. In a carrier alarm condition such as a Red, Yellow, or Blue (unframed all 1s), various alarm contacts in the PSU close. Carrier alarm conditions cause the Total Access 750 to initiate trunk processing. The following chain of events then occur:

Table 5. Specifications and Part Numbers

Power Requirements	
Input DC Voltage:	-40 to -56 Vdc, 50W maximum (From power supply or battery)
DC Voltage nominal:	-48 Vdc
Maximum Current:	1.0 Amp (3 Amp fused)
Fully Loaded:	1.0 Amp
Commons Only:	300 mAmp
Maximum Power:	48 Watts
Environmental	
Operating Temperature:	-40º to 70º C (-40º to 158º F)
Storage Temperature:	-30º to 70º C (-22º to 158º F)
Relative Humidity:	95% maximum, non-condensing
Physical	
Dimensions:	8 3/4" W x 3 5/8" H x 11" D
Weight (fully loaded):	8 pounds
(empty):	5 pounds
Total Access 750 Relevant Part Numbers	
Total Access 750 Chassis:	1175001L1, Practice: 61175001L1-5
BCU:	1175012L1, Practice: 61175012L1-5
PSU:	1175006L1, Practice: 61175006L1-5
Quad FXS:	1175408L1, Practice: 61175408L1-5
Quad FXO:	1175407L1, Practice: 61175407L1-5
Nx56/64:	1175025L1, Practice: 61175025L1-5
OCU-DP:	1180005L1, Practice: 61180005L1-5
DSO-DP:	1180003L1, Practice: 61180003L1-5
U-BR1TE:	1180020L1, Practice: 61180020L1-5
AC Power Supply/Battery Charger:	1175043L1, Practice: 61175043L1-5
Backup Battery Pack:	1175044L1, Practice: 61175044L1-5
Single Unit 19" Rack Mount Brackets:	1175045L1
Single Unit 23" Rack Mount Brackets:	1175046L1
System Configuration Part Numbers	
Chassis w/ PSU + BCU commons:	4175001L1
Chassis w/commons + AC/DC power supply:	4175001L1#AC
Chassis w/commons + 12 FXS:	4175001L3
Chassis w/commons + 12 FXS + AC/DC power supply:	4175001L3#AC
Chassis w/commons + 24 FXS:	4175001L6
Chassis w/commons + 24 FXS + AC/DC power supply:	4175001L6#AC
Dual side by side chassis for 19" or 23" rack:	1175201L1
Dual side by side chassis for 19" or 23" rack, each w/commons:	4175201L1

5. 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/Post-sale 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
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