Total Access OPTI-3 CPE Wallmount Cabinet Installation and Maintenance Practice

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1. GENERAL

This practice provides installation, wiring, and power turn-up instructions for the ADTRAN® Total Access® OPTI-3 CPE Wallmount Cabinet (Wallmount Cabinet). The OPTI-3 deploys fiber-fed DS3s from an OC-3 feed. The MX2800 converts one of the DS3s into 28 T1s. The Wallmount Cabinet is intended for indoor use at the customer premises. **Figure 1** illustrates the Wallmount Cabinet (P/N 4150WALO3L7).

Document Review

This document contains important pre-installation information. Craft personnel should review the entire document as part of installation planning.

Revision History

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

Description

The Wallmount Cabinet installation includes the following components:

- Dual hinged 10U wallmount cabinet
- Mounting brackets
- Fiber management shelf
- Fiber splice tray
- six-port fiber connector module

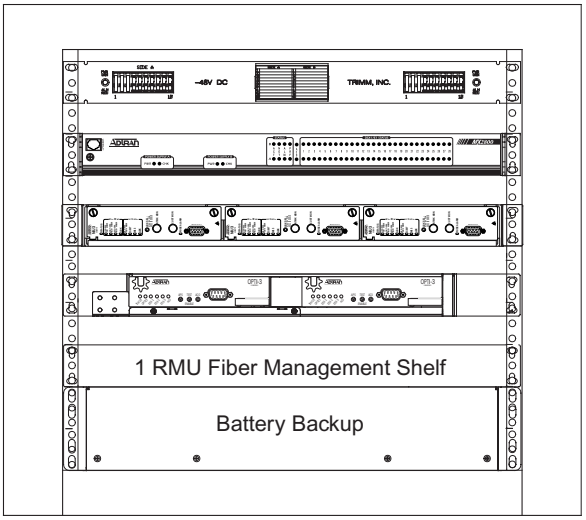

Figure 1. Wallmount Cabinet

- OPTI-3 rackmount chassis
- MX2800 rackmount chassis
- Two OPTI-3 controllers or lightwave controllers
- SC type optical connectors
- Coax cables and optical jumpers
- NIU3 3-slot shelf
- Three DS3 NIU3 MTC (MPOP) modules
- Two 1.9 amp power supply/battery chargers
- 10x10 fuse and alarm panel
- 7Ah battery backup

Cabinet Arrangement

All Wallmount Cabinet components are factory mounted and wired for power, ground, and alarms. Power wiring is complete with the exception of connecting the keyed plug from the backup battery to the power supply/battery charger (PS/BC). This wiring is identified and labeled ready for craft connection after the unit is securely mounted. Coaxial cables between the OPTI-3, NIU3, and MX2800 are factory connected. Optical jumper cables (3 meter) are provided for customer connection described later in this document.

The Wallmount Cabinet has 10U of vertical rack space and externally measures approximately 14-1/2-inches high by 24-inches wide by 17-1/4-inches deep, and weighs about 140 pounds equipped.

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The cabinet equipment access door has a full-view safety-glass window. The swing out equipment housing section has vent louvers on the top. The wallmount support frame has cable access openings on the bottom. A ground bus bar is mounted to the bottom inside of the cabinet. Vertical equipment racks are sized for 19-inch chassis components.

See **Figure 2** for a rear view of cabinet arrangement.

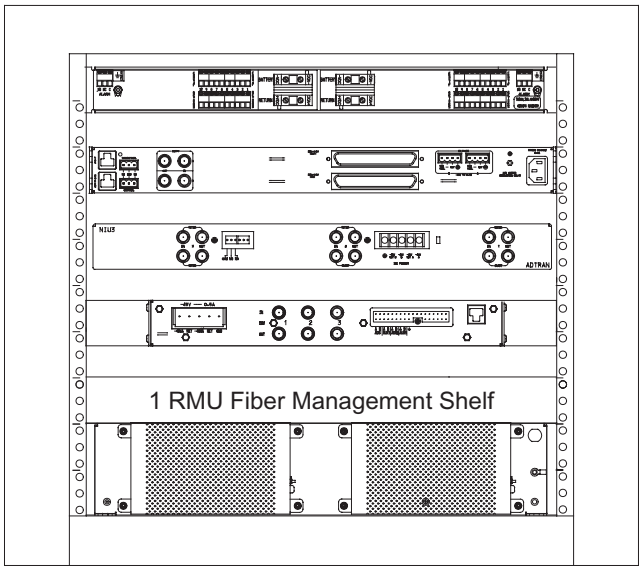

Figure 2. Wallmount Cabinet Rear View

The cabinet is configured with the two PS/BCs mounted to a panel installed bottommost in the cabinet. Viewed from the front, the left side PS/BC is the primary A-unit and the right side is the redundant B-unit.

Mounted above the power supplies is the fiber management shelf. It has a swing out door that gives access to the 6-position fiber termination panel. It is designed to accommodate fiber cable management for two OPTI-3 controller modules.

The OPTI-3 chassis is mounted above the fiber management shelf. It has slots for two OPTI-3 circuit boards: the in-service unit and an optional redundant unit if installed. Each OPTI-3 can feed three DS3 NIU3 circuit cards. The design is intended for 1-to-1 protection.

The DS3 NIU3 3-Slot chassis is mounted next above the OPTI-3. The NIU3 chassis has slots for three NIU3 circuit cards. Three test cards are provided for this installation: the DS3 Monitor and Test Card (DS3 MTC), P/N 1212071L1.

The MX2800 is mounted above the NIU shelf. It converts one DS3 into 28 DSX-1s.

The Trimm 10x10 fuse and alarm (F&A) panel is mounted topmost in the cabinet. It receives primary and secondary (redundant) power from the two PS/BCs. The F&A panel has terminals and fuse protection capability for primary and secondary power for a fully populated cabinet plus spare capability for customer use.

Features

The Wallmount Cabinet supports the following features and functions:

- 19-inch rackmount design
- Key lock security access
- Redundant power capability
- Independent frame ground connections
- Compact configuration
- Convenient access to front and back of chassis
- Factory wired for quick installation and turn-up
- FCC and UL compliant
- Meets NEBS Level 3 (all GR-63-CORE and GR-1089-CORE requirements)

Associated Unit Documentation

Individual unit documentation with detailed information exists for each element of the Wallmount Cabinet solution (see **Table 1**).

Table 1. Associated Documentation

Document	ADTRAN P/N
OPTI-3 Rackmount Chassis Job Aid	61184003L1-22
Total Access OPTI-3 Controller Module Installation and Maintenance Practice	61184002L1-5
AC/DC Power Supply and Battery Charger Job Aid	61175043L3-22
DS3 NIU3 3-Slot Shelf Unit Job Aid	61212073L1-22
DS3 Monitor and Test Card Job Aid	61212071L1-22
MX2800 Chassis Job Aid	61200290L1-22
Fiber splice tray	Vendor provided
F&A panel guide	Vendor provided

2. INSTALLATION

The Wallmount Cabinet installs at the customer premises in a limited access controlled environment location.

Inspection

After unpacking the Wallmount Cabinet inspect for damage or missing components. If damage or missing components are noted, file a claim with the carrier, then notify ADTRAN. Refer to *Warranty and Customer Service* section for more information.

Shipping Protection

Foam material may be installed to protect cabinet components from shifting during transportation. Ensure cabling is not damaged during foam removal.

Preparation

The system is shipped as an assembled and wired unit with the exception of connecting the PS/BC to the backup battery keyed plugs. Installation includes these main steps:

I. Mounting the cabinet

II. Making wiring connections

CAUTION

The cabinet with installed equipment weighs 140 pounds and will require two personnel to safely lift and hang the cabinet.

The Wallmount Cabinet is designed to mount to a minimum 3/4-inch plywood surface that is securely fastened to support frames, studs, wall, or an arrangement of equivalent strength. The Wallmount Cabinet installs with standard hand tools; special tools are not required.

The double hinged cabinet is comprised of three main elements:

- Front door with full-size transparent window.
- Swing open main housing with heavy-duty hinges and 19-inch equipment rack.
- Wallmount support frame with mounting brackets, ground bus bar, and cable entry openings.

Mounting Features and Dimensions

The Wallmount Cabinet occupies a nominal area 24 inches wide by 20.25 inches high and requires an additional 9 inches on the hinge side so the cabinet main housing can swing fully open, and 6 inches below for wire access.

Minimum Front Clearance

The Wallmount Cabinet extends 18 inches from the mounting surface and requires 40 inches front clearance from the mounting surface to fully open the door, and 28 inches to fully open the main housing.

NOTE

Craft should double check all dimensions in this practice to actual dimensions on the cabinet mounting area.

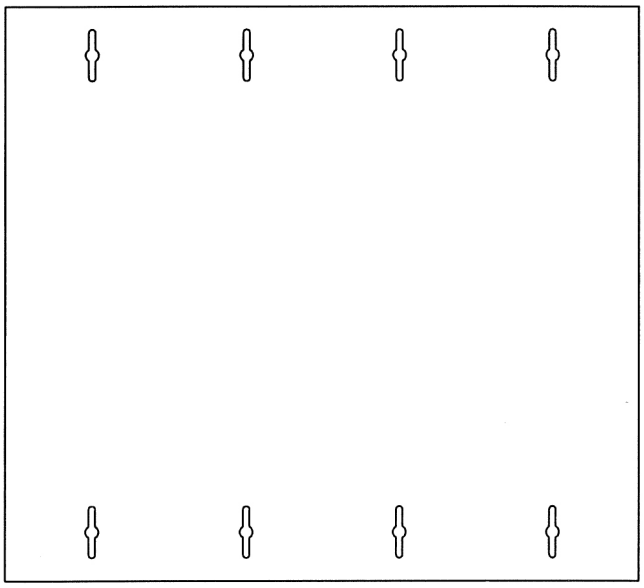

Figure 3. Cabinet Mounting Holes

Pilot Hole Location

The Wallmount Cabinet mounts to the wall using eight 1-1/2 by 1/4-inch lag screws with washers. Pilot holes must be drilled into the mounting surface at the eight lag screw positions. Locate and mark pilot holes per the following directions:

Within the designated area for Wallmount Cabinet mounting, mark a point for the upper left mounting lag screw.

1. Exactly 16 inches horizontally to the right from that point mark the spot for the upper right mounting lag screw. Ensure a level measurement.
2. The Wallmount Cabinet can be mounted and then the rest of the mounting screw locations can be drilled from within the cabinet. Refer to *I. Mounting the Cabinet* on page 4.

I. Mounting the Cabinet

The following procedure describes Wallmount Cabinet mounting:

1. Assemble required hand tools and mounting hardware.
2. Check the mounting position to ensure the Wallmount Cabinet will hang plumb and that adequate space exists on the hinge side to open the equipment rack main housing, then drill the two pilot holes at the marked point locations.
3. Partially insert the outside two top mounting screws including washers, leaving about a 1/2-inch gap between the washer and the mounting surface.
4. Ensure the door and main housing are securely closed then, with two craft personnel, lift and maneuver the cabinet so as to capture the two mounting screws on the bracket keyhole notches, ensure the washers are on the cabinet side of the notches. Allow the cabinet to slide down so the screw heads are at the top end of the slots.
5. With the Wallmount Cabinet thus suspended, hold firm against the mounting surface and firmly tighten the two lag screws.
6. Drill the holes for the other six lag screws.
7. Insert and tighten the six lag screws

This completes the Wallmount Cabinet mounting procedure.

II. Making Wiring Connections

Wallmount Cabinet wiring is labeled and cut to length with the appropriate terminals or keyed connectors factory assembled and connected. See **Figure 4** for wiring block diagram identification and arrangement. See **Figure 5** for circuit connections.

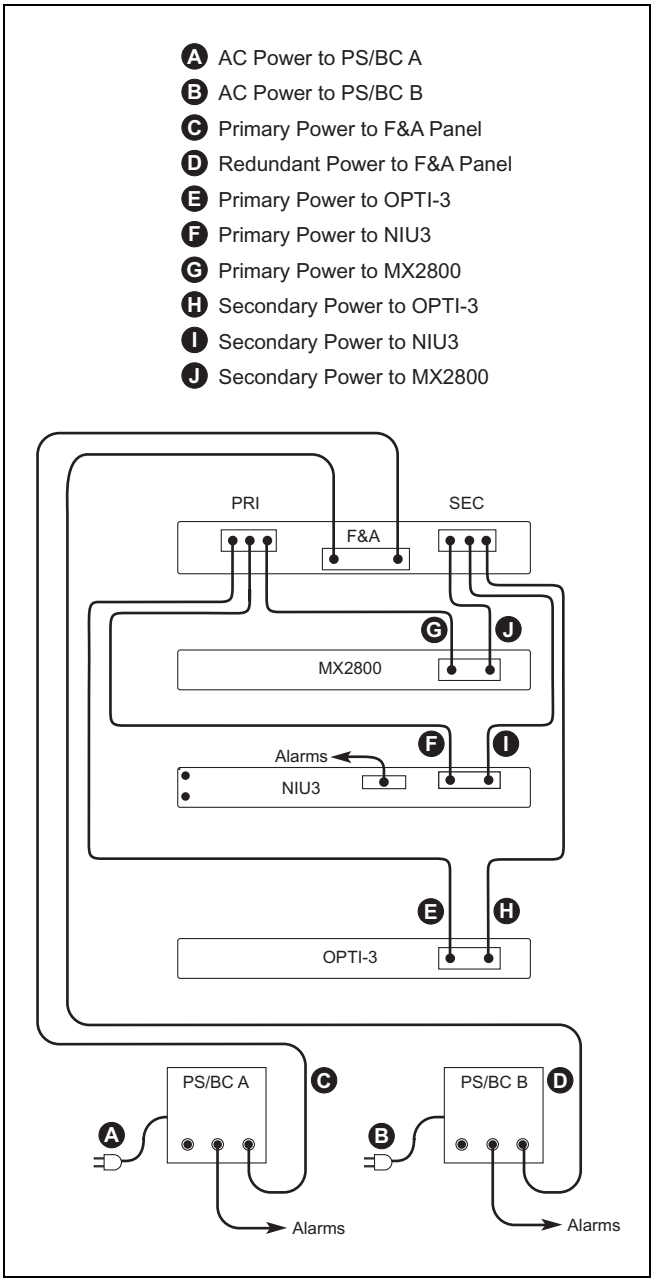

Figure 4. Wiring Block Diagram

CAUTION

Do not connect AC power until instructed to do so later in this procedure.

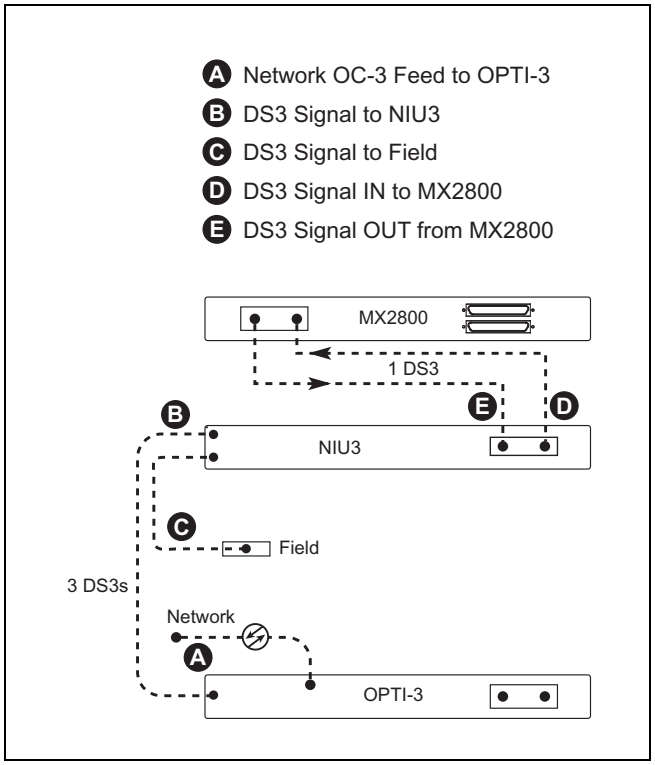

Figure 5. Circuit Connections

A cable access plate on the Wallmount Cabinet bottom panel provides the entry point for office ground, AC power, network coax/fiber connections, and other associated wiring.

Ground

WARNING

All grounds must terminate at an approved ground source. Check metal to metal contact on all ground connections. Do not combine or stack connections. Verify ground circuit continuity.

At the inside bottom left of the wallmount support frame is the cabinet ground bus bar. It has multiple screw compression terminals for ground connections. The ground bus is the primary cabinet ground source. The bus bar is ground connected to the support frame with a bolt arrangement. All shelf components are factory connected to the ground bus bar.

Cabinet Office Ground

Connect a customer-supplied, 10 AWG minimum, office ground wire to one of the unused compression terminals on the ground bus bar. This is the primary cabinet to office ground connection.

Alarms

The PS/BCs have an alarm output jack (AC ALARM OUTPUT). The alarm outputs are joined and are factory wire-wrapped on terminal posts AUX-1 on the OPTI-3 chassis backplane.

The F&A panel has a fuse fail alarm output that is factory wire wrapped to AUX-2 on the OPTI-3 chassis backplane.

Power

The two PS/BC units (A and B) mount to the back side of the battery. Each PS/BC power output originates at the –54 VDC, 2A OUTPUT connection, and terminates at a modular plug at the F&A panel. The F&A panel has a mating connector for each PS/BC output plug. PS/BC A supplies F&A panel A-side, PS/BC B supplies the B-side. F&A panel circuitry allows the PS/BC units to power share with one unit picking up the entire load if the other unit fails.

Power Distribution and Fuses

The F&A panel has 10 individually fused output terminals on the A-side and an additional 10 on the redundant B-side. Terminal sets **1A** and **1B** supply primary and secondary power input to the OPTI-3. The associated front panel GMT fuses are 3 amp. The OPTI-3 power input and return is on power sharing terminals labeled **–48V A** and **RET**, and **–48V B** and **RET**.

F&A terminal sets **2A** and **2B** supply primary and secondary power input to the NIU3. The associated front panel GMT fuses are 1.5 amp. The NIU3 power input and return is on power sharing terminals labeled **–48V A** and **RET**, and **–48V B** and **RET**.

F&A terminal sets **3A** and **3B** supply primary and secondary power input to the MX2800. The associated front panel GMT fuses are 3 amp. The MX2800 power input and return is on power sharing terminals labeled **–48V A** and **RET**, and **–48V B** and **RET**.

The remaining F&A output terminals are for customer use.

NOTE

For a fully redundant system each PS/BC must have an independent AC power source.

1. Connect PS/BC unit A power wire quick disconnect to F&A panel A-side quick disconnect.

2. Connect PS/BC unit B power wire quick disconnect to F&A panel B-side quick disconnect.

Refer to *System Power Turn-Up* below for the remainder of applying power.

Fiber Optic Jumpers

Fiber optic jumper cables are provided. The 3-meter cables connect the output of the fiber termination panel inside the fiber management shelf to the SC style optic connectors on the OPTI-3 circuit boards.

1. Open the fiber management shelf.
2. Partially insert an OPTI-3 card into the OPTI-3 chassis leaving the board mounted optical connectors accessible.
3. Carefully route and connect an optic jumper cable between the fiber termination panel and the designated OPTI-3 connector. Make use of all cable protection and management devices.
4. Insert the OPTI-3 card until firmly seated in the backplane and lock with the lock/eject latch.
5. Repeat the procedure for the remaining OPTI-3 circuit boards.

Network and Field Wiring

The customer is responsible for providing both network-side and field-side optical fiber and coaxial cables and making the connections to the appropriate termination. Refer to the applicable documentation (**Table 1** on page 2) for information and instructions for identifying these connections.

Final

All factory installed wiring is dressed and laced during installation. For those wires that were craft connected, dress and lace to workmanship standards, take special care with optical fiber cables. Allow slack for opening the equipment housing. This completes the wiring connections.

After all wiring connections are made and verified, reinstall protective covers and shields that were removed during the installation process. This step is necessary to maintain NEBS, UL, FCC, and safety certification.

3. SYSTEM POWER TURN-UP

System Power Turn-Up assumes that the OPTI-3 and NIU3 chassis have been outfitted with appropriate circuit cards, default options factory set, and wiring connections verified in accordance with the applicable documentation and this Installation and Maintenance Practice. If such is not the case complete that task first.

NOTE

Power turn-up should be conducted prior to connecting network and field data connections.

1. Insert both power supply AC plugs into a 120 VAC source. The PS/BC LEDs will turn ON green.

   The NIU3 status LEDs will turn ON green. The OPTI-3 LEDs will go through various ON/OFF sequences. The final OPTI-3 display will show the **STATUS** LEDs ON green and the remaining LEDs ON red or flashing red. Refer to specific unit documentation for complete LED descriptions.

   Test the power share and redundant functioning of the PS/BCs:
2. Unplug PS/BC unit A AC source. Observe its LED turning OFF. OPTI-3 and NIU3 LEDs should show normal, indicating that PS/BC unit B picked up the load.
3. Reinsert PS/BC unit A AC plug. The PS/BC LED will turn ON green again indicating normal operation.
4. Unplug the PS/BC unit B AC source. Observe its LED turning OFF. OPTI-3 and NIU3 LEDs should show normal, indicating that PS/BC unit A picked up the load.
5. Reinsert PS/BC unit B AC plug. Observe its LED turning ON green indicating normal operation.

For PS/BC LED details, refer to descriptions printed on the PS/BC chassis, or *Job Aid 61175043L3-22*.

This completes system power turn-up. If LED indications are normal, operators can proceed with network and field connections, and management and operation turn-up functions.

4. MAINTENANCE

The OPTI-3 Wallmount Cabinet does not require maintenance for normal operation.

Fuses

If a fuse fails replace with one of identical size, type, and rating. Repeated failure indicates a circuit malfunction.

PS/BC

The PS/BCs have a 3-amp fuse adjacent to the AC wire.

F&A Panel

The F&A panel has 3 amp GMT fuses in positions 1A and 1B supplying the OPTI-3, 1.5 amp GMT fuses in positions 2A and 2B supplying the NIU3, and 3 amp GMT fuses in positions 3A and 3B supplying the MX2800.

5. SPECIFICATIONS

Specifications for the Wallmount Cabinet are detailed in **Table 2**.

Table 2. Specifications

Power Supply/Battery Charger	
AC Input: Range: DC Output:	115 VAC Nominal 88 to 132 VAC –54 Volts
Fuse Rating	
MX2800: NIU3: OPTI-3:	3 amp 1.5 amp 3 amp
Cabinet Physical	
Dimensions: Weight:	24 in. W × 14.5 in. H × 17.25 in. D 140 lbs. fully equipped
Environment/Temperature	
Operating: Storage: Relative Humidity:	–40°C to +50°C –40°C to +85°C 95% noncondensing

6. 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, Customer and Product Service (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 CAPS prior to returning equipment to ADTRAN.

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