



Total Access 900 3rd Generation Series Hardware Installation Guide

| | |
|-----------|---|
| 4213908F1 | Total Access 908 Chassis (3rd Gen) |
| 4213916F1 | Total Access 916 Chassis (3rd Gen) |
| 4213924F1 | Total Access 924 Chassis (3rd Gen) |
| 4213924F2 | Total Access 924 Chassis (3rd Gen) with 16 FXS and 8 FXO |

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Conventions

**NOTE**

Notes provide additional useful information.

**CAUTION**

Cautions signify information that could prevent service interruption or damage to the equipment.

WARNING

Warnings provide information that could prevent injury or endangerment to human life.

Safety Instructions

When using your telephone equipment, please follow these basic safety precautions to reduce the risk of fire, electrical shock, or personal injury:

1. Do not use this product near water, such as a bathtub, wash bowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There is a remote risk of shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord, power supply, and batteries indicated in the manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for special disposal instructions.
5. The socket-outlet shall be installed near the equipment and shall be easily accessible.

If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your qualified service personnel:

1. The power cable, extension cable, or plug is damaged.
2. An object has fallen into the product.
3. The product has been exposed to water.
4. The product has been dropped or damaged.
5. The product does not operate correctly when you follow the operating instructions.



- *These units contain no user-serviceable parts.*
- *Il n'existe aucune pièce pouvant être réparée par l'utilisateur à l'intérieur de cet équipement.*



This product meets EU RoHS Directive. Refer to www.adtran.com for further information on RoHS and Waste Electrical and Electronic Equipment (WEEE) safety guidelines.

Save These Important Safety Instructions

FCC-Required Information

FCC regulations require that the following information be provided in this manual:

1. This equipment complies with Part 68 of Federal Communications Commission (FCC) rules and requirements adopted by America's Carriers Telecommunications Association (ACTA). Each registered interface has a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, provide this information to the telephone company.
2. If this equipment causes harm to the telephone network, the telephone company may temporarily discontinue service. If possible, advance notification is given; otherwise, notification is given as soon as possible. The telephone company will advise the customer of the right to file a complaint with the FCC.
3. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of this equipment. Advance notification and the opportunity to maintain uninterrupted service are given.
4. If experiencing difficulty with this equipment, please contact ADTRAN for repair and warranty information. The telephone company may require this equipment to be disconnected from the network until the problem is corrected, or it is certain the equipment is not malfunctioning.
5. This unit contains no user-serviceable parts.
6. This equipment is designed to connect to the telephone network or premises wiring using an FCC-compatible modular jack, which is compliant with Part 68 and requirements adopted by ACTA.
7. The following information may be required when applying to the local telephone company for leased line facilities:

| Product | Registration Number | Service Type | REN/SOC | FIC | USOC |
|--|-----------------------|---|-----------|--|--------|
| Total Access 908 T1 Products | US: HDCDENAN1213908F1 | 1.544 Mbps - SF | N/A/6.0N | 04DU9-BN 04DU9-DN 04DU9-1KN 04DU9-1SN | RJ-48C |
| Total Access 916/924 T1 Products | US: HDCDE02A1213924F1 | 1.544 Mbps - SF and B8ZS | | | |
| | | 1.544 Mbps - ESF 1.544 Mbps - ESF and B8ZS | | | |
| Total Access 924 with optional FXO ports | US: HDCDE02A1213924F1 | Analog Loop Start/Ground Start | 0.2A/9.0F | 02LS2/02GS2 | RJ21X |

8. The ringer equivalency number (REN) is useful in determining the quantity of devices you may connect to your telephone line and still have all of those devices ring when your number is called. In most areas, the sum of the RENs of all devices should not exceed five. To be certain of the number of devices you may connect to your line as determined by the REN, call your telephone company to determine the maximum REN for your calling area.
9. This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. Contact your state public utility commission or corporation commission for information.

FCC and Canadian Radio Frequency Interference Statement

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.



• This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAN ICES-3(A)/NMB-3(A)

Industry Canada Compliance Information Notice

This product meets the applicable Innovation, Science and Economic Development Canada technical specifications.

The Ringer Equivalence Number (REN) indicates the maximum number of devices allowed to be connected to a telephone interface. The termination of an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices not exceed five.

Ce produit est conforme aux spécifications techniques applicables d'Innovation, Sciences et Développement économique Canada.

Le numéro d'équivalence de sonnerie (REN) indique le nombre maximum d'appareils autorisés à être connectés à une interface téléphonique. La terminaison d'une interface peut consister en toute combinaison de dispositifs, sous réserve que la somme des REN de tous les dispositifs ne dépasse pas cinq.

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Service and Warranty

For information on the service and warranty of ADTRAN products, visit the [Support](#) section of the ADTRAN website at <http://www.adtran.com>.



Changes or modifications not expressly approved by ADTRAN will void the warranty.

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1. INTRODUCTION

This hardware installation guide describes the Total Access 900 Series units' physical characteristics, lists their features and specifications, introduces basic functionality, and provides installation instructions.

- [Physical Description on page 11](#)
- [Product Specifications on page 15](#)
- [Unit Installation on page 17](#)

For additional information on shipping contents, mounting options, and powering the unit, refer to the following sections:

- [Shipping Contents on page 12](#)
- [Mounting Options on page 19](#)
- [Supplying Power to the Unit on page 22](#)
- [Battery Backup Unit on page 24](#)

For information on Total Access 900 Series configuration for a specific application, refer to the configuration guides provided on the [ADTRAN Support Community](#). For details on the command line interface (CLI), refer to the [AOS Command Reference Guide](#). All other related documents are also available online at <http://supportforums.adtran.com>.

2. PHYSICAL DESCRIPTION

The 3rd Generation Total Access 900 Series products are high-bandwidth Internet Protocol (IP) business gateways designed for cost-effective deployment of up to 60 channels of Voice over IP (VoIP) services. The analog and digital (T1 robbed bit signaling (RBS) and primary rate interface (PRI) trunks) voice interfaces perform a gateway function into the service provider's VoIP network. The Ethernet interfaces typically serve as either wide area network (WAN) termination or connection points to customer's local area networks (LANs), and support both traditional data as well as IP telephony equipment.

The last two digits of the product name indicate the number of on-board analog voice ports. The Total Access 908 contains 8 FXS ports, the Total Access 916 contains 16 FXS ports, and the Total Access 924 contains 24 FXS ports or 16 FXS ports plus 8 FXO ports with octal FXO daughterboard. The units can provision, test, and provide status for any of the voice and data interfaces. The Total Access 900 Series units are RoHS compliant.

Total Access 900 Series products are built on the ADTRAN Operating System (AOS) platform and include the AOS built-in IP router and firewall features. The units include a T1 WAN interface (**NET T1 0/1**), a DSX-1 interface (**DSX-1 T1 0/2**), a VOICE interface (up to 24 foreign exchange station (FXS) ports or 16 FXS plus 8 foreign exchange office (FXO) ports), a 10/100/1000Base-T interface (**ETH 0/1**), and a **CRAFT** port (management interface). An optional battery backup is also available for the Total Access 900 Series (**BBU**). All connections are made via the rear panel.

In common packet-based applications, the wide area network (WAN) (**NET T1 0/1**) connects to the ISP or carrier's network and transmits packetized voice and data over a SIP trunk. The customer's voice is presented as time division multiplex (TDM) to the FXS ports or DSX-1 interface, and the data is routed out the local area network (LAN) (**ETH 0/1**).

Shipping Contents

Each Total Access 900 Series unit is shipped in its own cardboard shipping carton. Open the carton carefully, and avoid deep penetration into the carton with sharp objects.

After unpacking the unit, inspect it for possible shipping damage. If the equipment has been damaged in transit, immediately file a claim with the carrier and contact ADTRAN Customer Service (refer to the [Support](http://www.adtran.com/support) page on the ADTRAN website at <http://www.adtran.com/support>).

Shipments of the Total Access 900 Series units include the following items:

- Total Access 900 Series unit
- A detachable power cable with a grounded IEC three-prong power plug
- Two brackets and six screws for wall-mounting
- Quick start guide

Reviewing the Front Panel Design

[Figure 1](#) shows the Total Access 900 Series products' front panels (the Total Access 908 contains 8 FXS ports, the Total Access 916 contains 16 FXS ports, and the Total Access 924 contains 24 FXS ports or 16 FXS ports plus 8 FXO ports).



Figure 1. Total Access 900 Series Front Panel Layouts

Front Panel LEDs

Table 1 describes the front panel LEDs of the 3rd Gen Total Access 900 Series.

Table 1. Total Access 900 Series LEDs

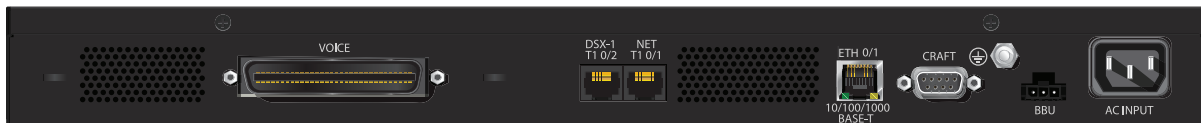
| LEDs | Color | Indication |
|---------------------------------|------------------|--|
| STATUS | Off | Bootstrap mode - The boot code cannot be booted. During bootstrap mode, VOICE , DATA , NET , and DSX-1 LEDs will be red. |
| | Green (flashing) | Unit is powering up. On power up, the STATUS LED flashes rapidly for 5 seconds, during which time the user may escape to bootstrap mode from the CRAFT port. |
| | Green (solid) | Power is on and the unit is functioning normally. |
| POWER | Off | No power. |
| | Green | AC power is operational. |
| | Amber | AC power has failed. Battery backup is active. |
| VOICE | Off | All ports are inactive or administratively shut down. |
| | Green (solid) | At least one port is off-hook. |
| | Green (flashing) | At least one port is ringing. |
| | Amber | At least one port is in test. |
| | Red | Fault condition. |
| DATA | Off | Administratively shut down. |
| | Green | Layer 2 is up on the NET interface. |
| | Red | Layer 2 is down on the NET interface. |
| NET / DSX-1 | Off | Port is administratively shut down. |
| | Green | Link is up and in normal operation. |
| | Amber | Port is in test. |
| | Red | An alarm condition is present. |
| LINK | Off | Link is down or port is administratively shut down. |
| | Green | 10Base-T link is up. |
| | Amber | 100Base-T link is up. |
| TD / RD | Off | No traffic present or port is administratively shut down. |
| | Green (flashing) | Data traffic is flowing. |
| ETH 0/1 (Rear Panel) | Green (off) | Link is down or port is administratively shut down. |
| | Green (solid) | Link is up. |
| | Amber (off) | No traffic present or port is administratively shut down. |
| | Amber (flashing) | Data traffic is flowing. |

Reviewing the Rear Panel Design

Figure 2 shows the 3rd Gen Total Access 900 Series' rear panel layouts.



Total Access 908



Total Access 916/924

Figure 2. Total Access 900 Series Rear Panel Layouts

Rear Panel Interfaces

VOICE Connection

A single 50-pin female amphenol connector, labeled **VOICE**, provides the interconnect wiring for the analog FXS and FXO circuits (FXO is available as an option only on the Total Access 924). See [Table A-1 on page 32](#) for **VOICE** connector pin assignments.



The Total Access 908 only uses circuits 1 through 8. The Total Access 916 only uses circuits 1 through 16. The Total Access 924 uses circuits 1 through 24, and the FXO interfaces are on circuits 17 through 24.

DSX-1 Interface

The **DSX-1 T1 0/2** interface is a DSX-1 RJ-48C pin connection. See [Table A-2 on page 33](#) for the DSX-1 network interface pinouts.

Network Interface

The **NET T1 0/1** interface is a DS1 RJ-48C pin connection. See [Table A-3 on page 33](#) for the T1 network interface pinouts.

10/100/1000Base-T Ethernet Interface and Activity LEDs

The Ethernet port (**ETH 0/1**) is an RJ-45 connector with LEDs. The amber activity LED flashes when data traffic is being sent or received on the Ethernet port. The green link LED is on

when the unit has a good connection to the LAN. See [Table A-4 on page 33](#) for the Ethernet port pinouts.

CRAFT Interface

The **CRAFT** interface is an EIA-232 serial port (DCE) that provides for local management and configuration (via a DB-9 female connector). [Table A-5 on page 34](#) shows the **CRAFT** port pinouts.



Connection directly to an external modem requires a cross-over cable.

Grounding Point

A grounding point is provided to connect the unit to a protective earth ground. Refer to [Supplying Power to the Unit on page 22](#) for connection details.

Battery Backup Connection

An optional battery backup system is available for the Total Access 900 Series. The Total Access 908 optional battery backup system part number is P/N 1200641L1. The Total Access 916/924 optional battery backup system part number is P/N 1175044L1 or L2. The connection port is labeled **BBU**. Refer to the documentation available for your specific battery backup unit for more information on this connection, or refer to [Battery Backup Unit on page 24](#) for more details.

Power Supply

The Total Access 900 Series products have a 120 VAC power supply with an IEC connector. The appropriate three-prong cable is included in the shipment.

3. PRODUCT SPECIFICATIONS

The Total Access 900 Series products have the following features:

Interfaces

- 8, 16, or 24 FXS ports OR 16 FXS ports plus 8 FXO ports
- 1 T1 WAN interface (RJ-48C)
- 1 DSX interface that supports Primary Rate ISDN (PRI) or robbed bit signaling (RBS)
- 1 routed 10/100/1000Base-T Ethernet port
- 1 EIA-232 craft port (DCE) provided for local management

Data/Router Features

- AOS-based IP router and firewall features
- Supports PPP, Multilink PPP, Frame Relay, Multilink Frame Relay, and HDLC
- Includes IPv4 and IPv6 support
- QoS/NAT/DHCP client, server, and relay
- Stateful inspection firewall

- IPsec VPN (50 tunnels minimum)
- DES, 3DES, and AES encryption for IPsec VPN traffic
- Supports SIP trunks

Voice Features

- Port-to-Port calling
- Three-way conferencing
- Caller ID, call waiting, call transfer, message waiting, distinctive ringing, and star codes
- Fax and analog modem compatible (V.90)
- T.38 fax relay
- Up to 60 channels of G.711 (μ -law)
- Up to 60 channels of G.726
- Up to 60 channels of G.729ab
- Up to 60 channels of DTMF detection/generation
- Up to 60 channels of caller ID
- Conforms to ITU G.168
- 64 ms echo cancellation
- 200 ms adaptive jitter buffer per channel

Management

- User-friendly GUI and a familiar CLI (AOS-based)
- SNMP
- LEDs for system status information

Physical Specifications

- Chassis dimensions (Total Access 908): 1.75-inch H x 12.2-inch W x 7.9-inch D
- Chassis dimensions (Total Access 916/924): 1.75-inch H x 17.2-inch W x 8.6-inch D
- Requires no more than 1RU between units when installed in a rack

Power Specifications

- 90-120 VAC, 60 Hz power supply
- Optional battery backup (1200641L1): 12 VDC (Total Access 908)
- Optional battery backup (1175044L1/L2): -48 VDC (Total Access 916/924)

Environmental Specifications

- Operating temperature: 32°F (0°C) to +122°F (+50°C)
- Storage temperature: -40°F (-40°C) to +158°F (+70°C)
- Relative humidity: Up to 95%, non-condensing

Compliance/Agency Approvals

- FCC Part 15, Class A
- NRTL Safety Listed
- ACTA/FCC Part 68/TIA-968
- RoHS
- IC CS03

4. UNIT INSTALLATION

The instructions and guidelines provided in this section cover hardware installation topics such as wall mounting, rack mounting, and installing the unit. Refer to [Shipping Contents on page 12](#) before getting started. The instructions are presented as follows:

- [Tools Required on page 18](#)
- [Mounting Options on page 19](#)
- [Grounding Instructions on page 22](#)
- [Supplying Power to the Unit on page 22](#)

For information on Total Access 900 Series configuration for a specific application, refer to the configuration guides provided on the [ADTRAN Support Community](#). For details on the command line interface (CLI), refer to the [AOS Command Reference Guide](#). All other related documents are also available online at <http://supportcommunity.adtran.com>.

WARNING

- *To prevent electrical shock, do not install equipment in a wet location or during an electrical storm.*
- *Pour prévenir les chocs électriques, n'installez pas d'équipement dans un endroit humide ou lors d'un orage.*



CAUTION

- *The Total Access 900 Series is intended to be installed, maintained, and serviced by qualified service personnel only and should be installed in a restricted access location.*
- *The product is intended for indoor use only. The Ethernet, FXS, DSX-1 ports and attached equipment are intended for use within the same building with equipotential bonding, and not intended to be placed in separate buildings or structures. Failure to deploy as described could result in permanent damage from lightning or other electrical events and voids the warranty. If it is necessary to connect the ports to remote outdoor equipment or between structures then add an appropriate protection device per the following:*
 - *ADTRAN's Ethernet Port Protection Device (EPPD) (P/N 1700502G1) must be connected between the unit and the outside plant cable. Use of any Ethernet protector other than ADTRAN's for this purpose will void the user's warranty.*
- *To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.*



- *La série Total Access 900 est destinée à être installée, entretenue et entretenue uniquement par du personnel de service qualifié et doit être installée dans un endroit à accès restreint.*
- *Le produit est destiné à une utilisation en intérieur uniquement. Les ports Ethernet, FXS, DSX-1 et l'équipement associé sont destinés à être utilisés dans le même bâtiment avec une liaison équipotentielle, et non destinés à être placés dans des bâtiments ou des structures séparés. Le non-déploiement tel que décrit peut entraîner des dommages permanents dus à la foudre ou à d'autres événements électriques et annule la garantie. S'il est nécessaire de connecter les ports à un équipement extérieur distant ou entre des structures, ajoutez un dispositif de protection approprié conformément aux éléments suivants:*
 - *Le dispositif de protection de port Ethernet (EPPD) d'ADTRAN (P/N 1700502G1) doit être connecté entre l'unité et le câble extérieur de l'installation. L'utilisation de tout protecteur Ethernet autre qu'ADTRAN à cette fin annulera la garantie de l'utilisateur.*
- *Pour réduire les risques d'incendie, utiliser uniquement des conducteurs de télécommunications 26 AWG au de section supérieure.*



Electronic modules can be damaged by static electrical discharge. Before handling modules, put on an antistatic discharge wrist strap to prevent damage to electrical 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.

Tools Required

The following customer-provided tools are required for installation of the Total Access 900 Series hardware:

- Drill and drill bit set
- #2 Phillips Screwdriver (or bit)
- 25-pair male amphenol cable (customer connection)
- Selected punch-down block and tool
- 1/4-inch nut-driver or socket (for attaching ring terminal ground lug)




- *To access the CLI of the Total Access 900, you will also need a PC with terminal emulation software and a console port cable. Instructions on how to access the CLI are available in the quick start guide shipped with your unit or online at [ADTRAN's Support Community](#).*
- *Refer to your Total Access 900 Series quick start guide shipped with your unit or available online at [ADTRAN's Support Community](#) for instructions on how to access the GUI and the CLI.*

Mounting Options

The Total Access 900 Series may be installed in a wallmount or rackmount configuration. The following sections provide step-by-step instructions for wall mounting and rack mounting.

Standard Wall Mounting Total Access 900 Series (Brackets Included with all Units)

Follow these steps to safely wallmount the Total Access 900 Series:

| | |
|---|--|
|  | <ul style="list-style-type: none"> To avoid damaging the unit, use only the screws included in the shipment when attaching mounting ears to the chassis. When wall mounting the Total Access 900, care must be taken not to damage the power cord. Do not attach the power cord to the building surface or run it through walls, ceilings, floors, or openings in the building structure. The receptacle outlet must be installed near the equipment and must be easily accessible. |
|---|--|

| Instructions for Wall Mounting Total Access 900 Series | |
|--|--|
| Step | Action |
| 1 | Attach the wall mounting brackets (using the included screws) so that the wall mount flange protrudes from the bottom of the unit (see Figure 3 on page 20) |
| 2 | Decide on a location for the Total Access 900 Series. Keep in mind that the unit needs to be mounted at or below eye level so that the LEDs are visible. Warning! The Total Access 900 Series can only be wall mounted with the front panel facing to the right, to the left, or downward (see the example in Figure 3 on page 20). Do not mount with the LED facing up. |
| 3 | Prepare the mounting surface by attaching a board (typically plywood, 3/4-inch to 1-inch thick) to a wall stud using #6 to #10 (2.5-inch or greater in length) wood screws. Important! Mounting to a stud ensures stability. Using sheetrock anchors may not provide sufficient long-term stability. |
| 4 | Have an assistant hold the unit in position as you install two #6 to #10 (length not to exceed board thickness) wood screws through the unit's brackets and into the mounted board (see Figure 3 on page 20). |
| 5 | Proceed to the steps given in Grounding Instructions on page 22 . |

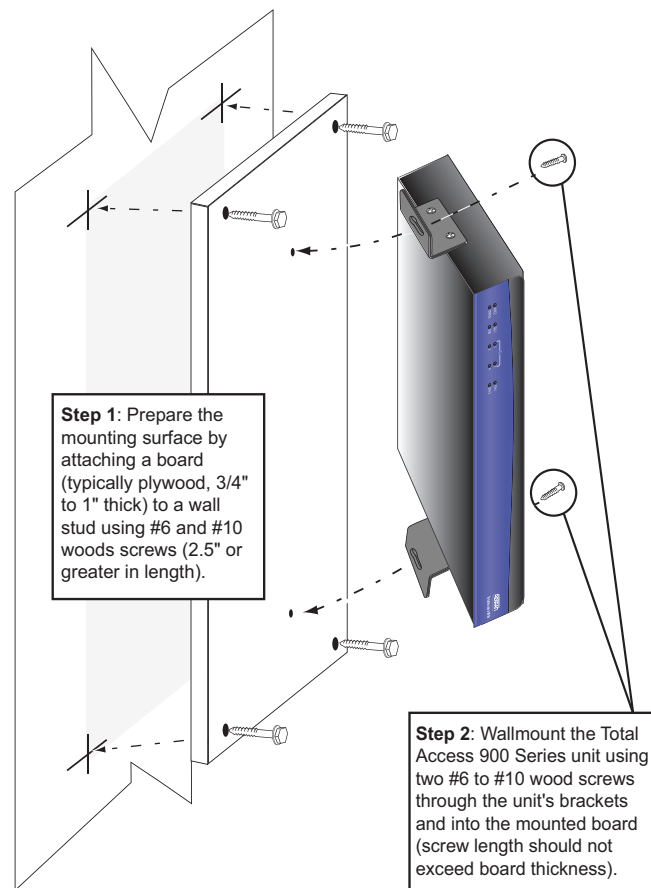


Figure 3. Wall Mounting the Unit

Rack Mounting Total Access 900 Series

For a rackmount installation, optional rackmount brackets must be purchased from ADTRAN. These rack mounting brackets connect to EIA/WECO style telecom racks using standard rack mounting hardware. [Table 2](#) lists the Total Access 900 Series rack mounting brackets available from ADTRAN:

Table 2. Available Rackmount Brackets

| Part Number | Product | Bracket Size |
|-------------|----------------------|------------------------|
| 1200927L18 | Total Access 908 | 19" rackmount brackets |
| 1200927L19 | Total Access 916/624 | 19" rackmount brackets |
| 1200927L23 | Total Access 916/924 | 23" rackmount brackets |



ADTRAN recommends 1U (1.75 inches) of separation above and below the Total Access 900 Series unit. This spacing allows the unit to dissipate heat. The design of the Total Access 900 Series uses the chassis to distribute heat generated by the unit's internal cards. This design allows the unit to operate without a cooling fan, ensuring the overall reliability of the unit.

Follow these steps to safely rackmount the Total Access 900 Series:



- *If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature specified by the manufacturer.*
- *Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.*
- *Be careful not to compromise the stability of the equipment mounting rack when installing this product.*
- *Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading the circuit might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.*
- *Reliable grounding of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).*

Instructions for Rack Mounting Total Access 900 Series

| Step | Action |
|------|--|
| 1 | Attach the rack mounting brackets to the Total Access 900 product using the hardware provided with the brackets. |
| 2 | Position the Total Access 900 Series in a stationary equipment rack. This unit takes up 1U of space. To allow proper grounding, scrape the paint from the rack around the mounting holes where the Total Access 900 Series will be positioned. |
| 3 | Install two rack mount bolts through each of the unit's brackets to secure the unit to the rack. (Rack mounting brackets support both WECO 1" and EIA hole patterns). |
| 4 | Proceed to Grounding Instructions on page 22 . |

5. GROUNDING INSTRUCTIONS

The following provides grounding instructions for the Underwriters' Laboratory UL 60950-1 Standard for Safety of Information Technology Equipment Including Electrical Business Equipment.

A supplementary equipment grounding conductor shall be installed between the product or system and ground that is in addition to the equipment grounding conductor in the power supply cord. The supplementary equipment grounding conductor shall not be smaller in size than the ungrounded branch-circuit supply conductors. The supplementary equipment grounding conductor shall be connected to the product at the terminal provided, and shall be connected to ground in a manner that will retain the ground connection when the product is unplugged from the receptacle. The connection to ground of the supplementary equipment grounding conductor shall be in compliance with the rules for terminating bonding jumpers at Part K or Article 250 of the National Electrical Code, ANSI/NFPA 70. Termination of the supplementary equipment grounding conductor is permitted to be made to building steel, to a metal electrical raceway system, or to any grounded item that is permanently and reliably connected to the electrical service equipment ground.

The supplemental grounding conductor shall be connected to the equipment using a #6 ring terminal and should be fastened to the grounding lug provided on the rear panel of the equipment. The ring terminal should be installed using the appropriate crimping tool.

Grounding for AC Power

The attachment-plug receptacles in the vicinity of the product or system are all to be of a grounding type, and the equipment grounding conductors serving these receptacles are to be connected to earth ground at the service equipment.

6. SUPPLYING POWER TO THE UNIT

As shipped, each Total Access 900 Series product is set to factory default conditions. After installing the unit, the Total Access 900 Series product is ready for power up. To power the unit, ensure that the unit is properly connected to an appropriate power source (as outlined in the sections below).

The Total Access 900 Series products utilize integrated AC power supplies for direct connection to a standard 120 VAC, 60 Hz, AC outlet. The current rating for Total Access 908 products is 0.6A. The current rating for the Total Access 916/924 products is 1.5A. A grounded, three-plug detachable AC power cable is included with the shipment.



- *In addition to the equipment earthing conductor in the power supply cord, a supplementary equipment earthing conductor is to be installed between the system and earth.*
- *The supplemental earthing conductor shall be connected to the equipment using a #6 ring terminal and should be fastened to the grounding lug provided on the rear panel of the equipment. The ring terminal should be installed using the appropriate crimping tool.*
- *The supplementary equipment earthing conductor must not be smaller in size than cross-sectional area of not less than 2.5 mm²/14 AWG, if mechanically protected. The supplementary equipment earthing conductor is to be connected to the product at the terminal provided, and connected to earth in a manner that will retain the earth connection when the power supply cord is unplugged. The connection to earth of the supplementary earthing conductor must be in compliance with the appropriate rules for terminating bonding jumpers in Part K of Article 250 of the National Electrical Code, ANSI/NFPA 70, and Article 10 of Part 1 of the Canadian Electrical Code, Part 1, C22.1. Termination of the supplementary earthing conductor is permitted to be made to building steel, to a metal electrical raceway system, or to any earthed item that is permanently and reliably connected to the electrical service equipment earthed.*
- *Bare, covered, or insulated earthing conductors are acceptable. A covered or insulated conductor must have a continuous outer finish that is either green, or green with one or more yellow stripes.*
- *A readily accessible disconnect device, that is suitably approved and rated, shall be incorporated in the field wiring.*
- *Maximum recommended ambient operating temperature is 50°C.*



- *The installation of this product must comply with the national, state and local electrical code requirements, as applicable. The AC branch circuit overcurrent protection must be a fuse or circuit breaker rated 125 VAC, 20 Amps maximum. A readily accessible disconnect device that is suitably approved and rated must be incorporated in the field wiring.*
- *The AC branch circuit socket-outlet must be installed near the equipment and must be easily accessible.*
- *It is recommended that an external AC Surge Protection Device be installed at the AC input connection to the local AC-Powered product. The Surge Protection device should provide L-N, L-G, and N-G protection. It is also recommended that the device contains a visual 'GOOD' indicator.*

| Instructions for Powering the Total Access 900 Series | |
|---|--|
| Step | Action |
| 1 | Fully insert the AC power cord into the AC power receptacle on the rear panel of the unit. |
| 2 | Insert the other end of the power cable into a properly grounded power source. |
| 3 | Confirm that the power is connected properly. The POWER LED should be ON . |

7. BATTERY BACKUP UNIT

The ADTRAN battery backup unit (BBU) is an optional device designed as a backup DC power supply for the Total Access 900 Series.

Total Access 908 BBU (P/N 1200641L1)

The BBU connects to the Total Access 908 through a 2-foot charge/discharge, 2-conductor wire with a keyed modular plug (included with the BBU). The 1200641L1 BBU is a low profile wallmount configuration. The BBU is **not** rack mountable. [Figure 4](#) displays the Total Access 908 BBU.



Figure 4. Total Access 908 BBU (P/N 1200641L1)

Features of the BBU, P/N 1200641L1, include the following:

- No-spill battery design
- Compact wallmount box
- 7 Ah, 12VDC battery (up to 8 hours of backup, depending on load)
- Modular plug (provides quick and easy installation)

Total Access 916/924 BBU (P/N 1175044L1)

The BBU connects to the Total Access 916/924 through a 6-foot charge/discharge, 2-conductor wire with a keyed modular plug (included with the BBU). The 1175044L1 BBU is a low profile wallmount configuration. It can be rack mounted with the appropriate 19-inch (P/N 1175047L1 - Dual BBU or 1175048L2 - Single BBU) or 23-inch (P/N 1175048L1 - Single BBU) rackmount adapter brackets. [Figure 5](#) displays the Total Access 916/924 BBU.



Figure 5. Total Access 916/924 BBU (P/N 1175044L1)

Features of the BBU, P/N 1175044L1, include the following:

- No-spill battery design
- Compact wallmount or rackmount box
- Double BBU rack mounting available
- 7 Ah, 48VDC battery (up to 8 hours of backup, depending on load)
- Modular plug (provides quick and easy installation)
- Wall mounting hardware included

Total Access 916/924 Wall-Mount BBU (P/N 1175044L2)

This BBU connects to the Total Access 916/924 through a 6-foot charge/discharge, 2-conductor wire with a keyed modular plug (included with the BBU). The 1175044L2 BBU is a wall-mount only BBU, with a hinged front access door, equivalent to the wall or rack-mounted 1175044L1 BBU. [Figure 4](#) displays the Total Access 916/924 BBU.



Figure 6. Total Access 916/924 Wall-mount BBU (P/N 1175044L2)

Features of the BBU, P/N 1175044L2, include the following:

- No-spill battery design
- Compact wallmount box
- 7 Ah, 48VDC battery (up to 8 hours of backup, depending on load)
- Modular plug (provides quick and easy installation)
- Wall mounting hardware included

Unpack and Inspect the BBU



Removing the BBU covers could allow batteries to fall out.

After unpacking the BBU unit, inspect it for damage. If damage is noted, file a claim with the carrier; then contact ADTRAN Customer Service.



The BBU (P/N 1175044L1/L2) weighs in excess of 30 pounds. Arrange for assistance when handling the BBU for mounting.

Batteries are retained and prewired in the BBU in a specific pattern. Battery position is maintained by foam spacers press-fitted against the housing walls. Removing batteries or disconnecting wires compromises correct reassembly and should not be attempted.



The BBU should only be used in specified ADTRAN applications.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including that which may cause undesired operation.

Wall Mounting the BBU

Wall Mounting the Total Access 908 BBU (1200641L1)

Figure 7 shows the BBU mounting dimensions for the Total Access 908 (template included with BBU).

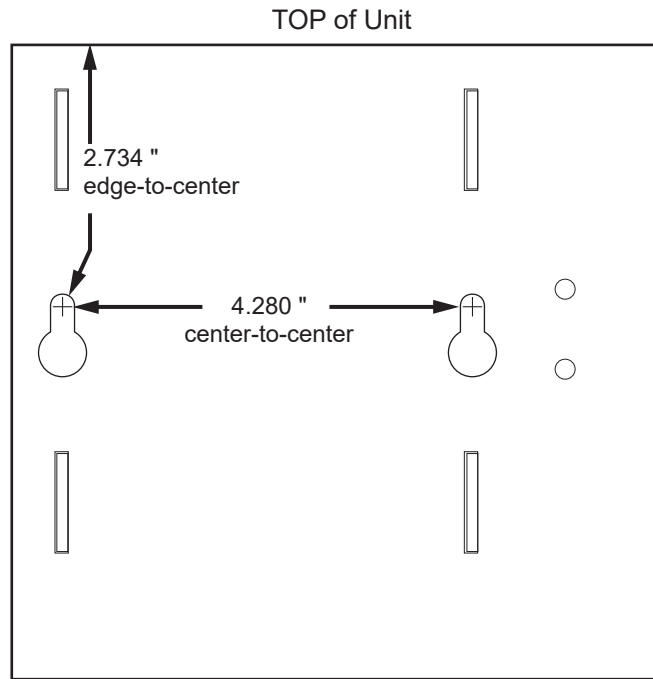


Figure 7. Wall Mounting the 1200641L1 BBU

For a wallmount installation, the BBU installs on plywood (3/4-inch minimum) using two #10 x 3/4-inch pan-head wood screws (customer provided). Install the BBU as follows:

| Instructions for Wall Mounting the 1200641L1 BBU | |
|--|--|
| Step | Action |
| 1 | Determine the preferred unit layout to ensure cable plugs reach their designated sockets. |
| 2 | Ensuring a plumb measurement, mark where the pilot holes are to be drilled according to the dimensions given in the documentation included with your shipment. |
| 3 | Drill the two pilot holes using a size 1/16-inch drill bit. |
| 4 | Screw in the top two pan-head screws that fit the keyhole openings. Let the head of each screw protrude ~1/8 inch from the plywood to engage the keyhole slot. |
| 5 | Position the BBU and to hang on the screw heads. Allow the unit to slide down until the slot end rests against the screws. Then fully tighten the #10 screws to secure the BBU to the plywood. |
| 6 | Use cable ties as appropriate. The battery connection from the BBU should be directly connected to the BBU port on the rear of the chassis. |

Wall Mounting the Total Access 916/924 BBU (1175044L1)

For a wallmount installation, the BBU installs on plywood (3/4-inch minimum) using four #10 x 3/4-inch pan-head wood screws (provided with the BBU). Install the BBU as follows:

Figure 8 shows the BBU mounting dimensions for the Total Access 916/924.

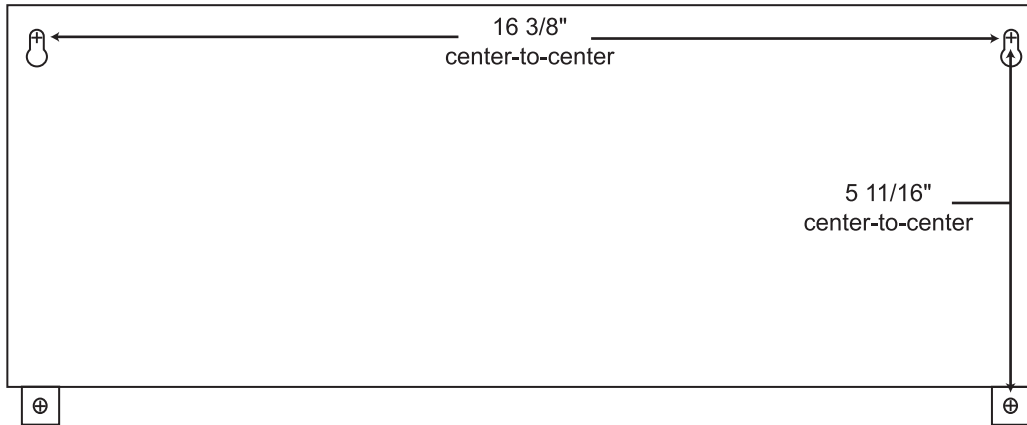


Figure 8. Wall Mounting the 1175044L1 BBU

| Instructions for Wall Mounting the 1175044L1/L2 BBU | |
|---|--|
| Step | Action |
| 1 | Determine the preferred unit layout to ensure cable plugs reach their designated sockets. |
| 2 | Ensuring a plumb measurement, mark where the pilot holes are to be drilled according to the dimensions given in the documentation included with your shipment. |
| 3 | Drill all four pilot holes using a size 1/16-inch drill bit. |
| 4 | Screw in the top two pan-head screws that fit the keyhole openings. Let the head of each screw protrude 1/16 inch from the plywood to engage the keyhole slot. |




CAUTION Do not let the weight of the BBU rest on the two keyhole screws. Maintain support until the lower two screws are fully inserted.


| | |
|---|--|
| 5 | Lift the BBU with an assistant and position to engage the screw heads. Allow the unit to slide down until the slot end rests against the screws. |
| 6 | Insert the two lower screws through the tabs and tighten securely. |
| 7 | Use cable ties as appropriate. The battery connection from the BBU should be directly connected to the BBU port on the rear of the chassis. |

Wall Mounting the Total Access 916/924 BBU (1175044L2)

For a wallmount installation, the BBU installs on plywood (3/4-inch minimum) using three #10 x 3/4-inch pan-head wood screws (provided with the BBU). Install the BBU as follows:.

| | | |
|--|---|--|
|  NOTE | <i>The 1175044L2 BBU must be mounted with the following minimum clearances:</i> | |
| | • <i>Top: 9-inch clearance</i> | |
| | • <i>Bottom: 5-inch clearance</i> | |
| | • <i>Left Side: 5-inch clearance</i> | |
| | • <i>Right side: 2-inch clearance</i> | |

| Instructions for Wall Mounting the 1175044L2 BBU | |
|---|---|
| Step | Action |
| 1 | Determine the preferred unit layout to ensure cable plugs reach their designated sockets. |
| 2 | Ensuring a plumb measurement, use the template provided with the 1175044L2 BBU to mark and drill three pilot holes for the #10 mounting screws. |
| 3 | Insert the supplied wood screws (#10 x 3/4") into the three pilot holes, leaving 1/16" space between the screw-head and the backboard. |

| | | |
|--|---|--|
|  CAUTION | <i>Fully loaded BBU weighs 30 pounds.</i> | |
|--|---|--|

| | |
|---|--|
| 4 | Mount the BBU on the three support screws on the battery box and open the cover. |
| 5 | Use a long-shaft screwdriver to tighten the three support screws and secure the BBU to the wall. |
| 6 | Use cable ties as appropriate. The battery connection from the BBU should be directly connected to the BBU port on the rear of the Total Access 916/624chassis. |

Maintenance

- The BBU does not require routine maintenance for normal operation. The life expectancy of the BBU is 3 to 5 years on standby use when used at room temperature.
- Excessive heat decreases battery power and life. Extreme low temperature also decreases battery capacity. Ideal ambient temperature for battery life and capacity is 68°F (20°C).
- Battery shelf life is extended in cooler temperatures.
- To order replacement batteries, reference the following part number: 1975044L1 (12 V replacement batteries).

ADTRAN is an environmentally friendly company. Therefore, we encourage the proper recycling and handling of the batteries. Federal and state laws prohibit the improper disposal of all lead acid batteries. The customer is responsible for the handling of their batteries from the day of purchase through their ultimate disposal. For more information on battery replacement and recycling, reference ADTRAN document number 60000120-36 online at www.adtran.com/environmental. (Enter the document number in the search field to display a link to the document.)

Specifications

[Table 3](#) provides BBU specifications.

Table 3. BBU Specifications

| Battery | |
|-------------------------|--|
| Part Number: | 311212V02 |
| Suppliers: | YUASA and Panasonic |
| Batteries: | 7 Ahr per battery |
| Voltage: | -12 VDC per battery |
| Backup Time: | Up to 8 hours |
| Wire Gauge: | 18 AWG |
| Environmental | |
| Operating Temperatures: | Charge: 5°F to 122°F (-15°C to 50°C) Discharge: -4°F to 140°F (-20°C to 60°C) |
| Preferred: | 68°F (20°C) |

Your Total Access 900 Series unit is now ready to be configured and connected to the network. For information on configuration for a specific application, refer to the configuration guides provided online on [ADTRAN's Support Community](#). For details on the CLI, refer to the [AOS Command Reference Guide](#). All other related documents are also available online on [ADTRAN's Support Community](#).

APPENDIX A. PIN ASSIGNMENTS

The following tables provide the pin assignments for the unit.

Table A-1. VOICE Connector Pinouts

| Pins | 50-pin Amphenol Connector | Description |
|--------|---------------------------|---|
| 1, 26 | Circuit 1 | FXS 0/1 Ring, Tip |
| 2, 27 | Circuit 2 | FXS 0/2 Ring, Tip |
| 3, 28 | Circuit 3 | FXS 0/3 Ring, Tip |
| 4, 29 | Circuit 4 | FXS 0/4 Ring, Tip |
| 5, 30 | Circuit 5 | FXS 0/5 Ring, Tip |
| 6, 31 | Circuit 6 | FXS 0/6 Ring, Tip |
| 7, 32 | Circuit 7 | FXS 0/7 Ring, Tip |
| 8, 33 | Circuit 8 | FXS 0/8 Ring, Tip |
| 9, 34 | Circuit 9 | FXS 0/9 Ring, Tip |
| 10, 35 | Circuit 10 | FXS 0/10 Ring, Tip |
| 11, 36 | Circuit 11 | FXS 0/11 Ring, Tip |
| 12, 37 | Circuit 12 | FXS 0/12 Ring, Tip |
| 13, 38 | Circuit 13 | FXS 0/13 Ring, Tip |
| 14, 39 | Circuit 14 | FXS 0/14 Ring, Tip |
| 15, 40 | Circuit 15 | FXS 0/15 Ring, Tip |
| 16, 41 | Circuit 16 | FXS 0/16 Ring, Tip |
| 17, 42 | Circuit 17 | FXS 0/17 Ring, Tip or FXO 0/1 Ring, Tip |
| 18, 43 | Circuit 18 | FXS 0/18 Ring, Tip or FXO 0/2 Ring, Tip |
| 19, 44 | Circuit 19 | FXS 0/19 Ring, Tip or FXO 0/3 Ring, Tip |
| 20, 45 | Circuit 20 | FXS 0/20 Ring, Tip or FXO 0/4 Ring, Tip |
| 21, 46 | Circuit 21 | FXS 0/21 Ring, Tip or FXO 0/5 Ring, Tip |
| 22, 47 | Circuit 22 | FXS 0/22 Ring, Tip or FXO 0/6 Ring, Tip |
| 23, 48 | Circuit 23 | FXS 0/23 Ring, Tip or FXO 0/7 Ring, Tip |
| 24, 49 | Circuit 24 | FXS 0/24 Ring, Tip or FXO 0/8 Ring, Tip |
| 25, 50 | — | Unused |



The Total Access 908 only uses circuits 1 through 8. The Total Access 916 only uses circuits 1 through 16. The Total Access 924 uses circuits 1 through 24, and the FXO interfaces are on circuits 17 through 24. The FXO ports are only available on the Total Access 924.

Table A-2. DSX-1 (T1 0/2) Pinouts

| Pin | Name | Description |
|-----|------|-------------------------------------|
| 1 | R | Transmit data toward the DTE (Ring) |
| 2 | T | Transmit data toward the DTE (Tip) |
| 3 | — | Unused |
| 4 | R1 | Receive data from the DTE (Ring 1) |
| 5 | T1 | Receive data from the DTE (Tip 1) |
| 6-8 | — | Unused |

Table A-3. NET (T1 0/1) Pinouts

| Pin | Name | Description |
|-----|------|---|
| 1 | R1 | Receive data from the network (Ring 1) |
| 2 | T1 | Receive data from the network (Tip 1) |
| 3 | — | Unused |
| 4 | R | Transmit data toward the network (Ring) |
| 5 | T | Transmit data toward the network (Tip) |
| 6-8 | — | Unused |

Table A-4. 10/100/1000Base-T Ethernet Port Pinouts

| Pin | Name | Description |
|-----|--------|---------------------------|
| 1 | BI_DA+ | Transmit/Receive Positive |
| 2 | BI_DA- | Transmit/Receive Negative |
| 3 | BI_DB+ | Transmit/Receive Positive |
| 4 | BI_DC+ | Transmit/Receive Positive |
| 5 | BI_DC- | Transmit/Receive Negative |
| 6 | BI_DB- | Transmit/Receive Negative |
| 7 | BI_DD+ | Transmit/Receive Positive |
| 8 | BI_DD- | Transmit/Receive Negative |

Table A-5. CRAFT Port Pinouts

| Pin | Name | Description |
|-----|------|--|
| 1 | DCD | Data Carrier Detect (output) |
| 2 | RD | Receive Data (output) |
| 3 | TD | Transmit Data (input) |
| 4 | DTR | Data Terminal Ready (input) |
| 5 | GND | Ground - connected to unit chassis |
| 6 | DSR | Data Set Ready (output) |
| 7 | RTS | Request To Send - flow control (input) |
| 8 | CTS | Clear To Send - flow control (output) |
| 9 | — | Not Connected |

**NOTE**

Connection directly to an external modem requires a cross-over cable.