Total Access 900e Series
Hardware Installation Guide

Total Access 908e

Total Access 916e

Total Access 924e

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August 2013

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ADTRAN, Inc, P.O. Box 933638, Atlanta, GA 31193-3638
Please write **GPL Source for product Total Access 900e** in the memo line of your payment.

This offer is valid to anyone in receipt of this information.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

901 Explorer Boulevard
P.O. Box 140000
Huntsville, AL 35814-4000
Phone: (256) 963-8000

Conventions

Notes provide additional useful information.

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. They should only be serviced by qualified service personnel.

Additional safety guidelines, such as Waste Electrical and Electronic Equipment (WEEE), are given in the document NetVanta Safety and Regulatory Information available online at http://supportforums.adtran.com.

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 908e T1 Products	US: HDCIT00B4243908F2	1.544 Mbps - SF 1.544 Mbps - SF and B8ZS 1.544 Mbps - ESF 1.544 Mbps - ESF and B8ZS	N/A/6.0N	04DU9-BN 04DU9-DN 04DU9-1KN 04DU9-1SN	RJ-48C
Total Access 916e/924e T1 Products	US: HDCIS00B1700254F2				
Total Access 924e with optional FXO ports	US: HDCIS00B1700254F2	Analog Loop Start/Ground Start	0.1A/9.0F	02LS2/02GS2	RJ-11C

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 Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B 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 frequencies. 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.

Industry Canada Compliance Information

Notice: The Industry Canada label applied to the product (identified by the Industry Canada logo or the "IC:" in front of the certification/registration number) signifies that the Industry Canada technical specifications were met.

Notice: The REN for this terminal equipment is supplied in the documentation or on the product labeling/markings. The REN assigned to each terminal device indicates the maximum number of terminals that can be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices should not exceed five (5).

Canadian Emissions Requirements

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioelectriques applicables aux appareils numériques de Class A prescrites dans la norme sur le materiel brouilleur: "Appareils Numériques," NMB-003 edictee par le ministre des Communications.

Toll Fraud Liability

Be advised that certain security risks are inherent in the use of any telecommunications or networking equipment, including but not limited to, toll fraud, Denial of Service (DoS) attacks, loss or theft of data, and the unauthorized or illegal use of said equipment. ADTRAN OFFERS NO WARRANTIES, EITHER EXPRESSED OR IMPLIED, REGARDING THE PREVENTION, DETECTION, OR DETERRENCE OF TOLL FRAUD, NETWORKING ATTACKS, OR UNAUTHORIZED, ILLEGAL, OR IMPROPER USE OF ADTRAN EQUIPMENT OR SOFTWARE. THEREFORE, ADTRAN IS NOT LIABLE FOR ANY LOSSES OR DAMAGES RESULTING FROM SUCH FRAUD, ATTACK, OR IMPROPER USE, INCLUDING, BUT NOT LIMITED TO, HUMAN AND DATA PRIVACY, INTELLECTUAL PROPERTY, MATERIAL ASSETS, FINANCIAL RESOURCES, LABOR AND LEGAL COSTS. Ultimately, the responsibility for securing your telecommunication and networking equipment rests with you, and you are encouraged to review documentation regarding available security measures, their configuration and implementation, and to test such features as is necessary for your network.

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.

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1. INTRODUCTION

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

- *Physical Description on page 14*
- *Product Specifications on page 20*
- *Unit Installation on page 21*

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

- *Shipping Contents on page 14*
- *Mounting Options on page 22*
- *Supplying Power to the Unit on page 25*
- *Battery Backup Unit on page 26*

For information on Total Access 900e 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 Total Access 900e 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 last two digits of the product name indicate the number of on-board FXS ports. The Total Access 908e contains 8 FXS ports, the Total Access 916e contains 16 FXS ports, and the Total Access 924e 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.

Total Access 900e Series products all run ADTRAN Operating System (AOS) application firmware and include the AOS built-in IP router and firewall features. The units includes a VOICE interface (up to 24 foreign exchange station (FXS) ports or 16 FXS plus 8 foreign exchange office (FXO) ports), an optional FXO trunk (**FXO 0/0**), 4 DS1 network interfaces (**T1 0/1** through **T1 0/4**), 2 routed 10/100Base-T interfaces (**ETH 0/1**, **ETH 0/2**), a single routed 10/100/1000Base-T Ethernet port (**GIG 0/1**), a Universal Serial Bus (**USB**) port, and a **CRAFT** port (management interface). A connection (**BBU**) is provided for an optional battery backup unit. The Total Access 900e Series units are RoHS compliant.

In common packet-based applications, the wide area network (WAN) can be terminated using the T1 interfaces (**T1 0/1** through **T1 04**) or the Ethernet interfaces (**GIG 0/1** or **ETH 0/1**, **ETH 0/2**). This interface connects to the service provider's or carrier's network and transmits packetized voice and data over a Session Initiation Protocol (SIP) trunk(s). The customer's data traffic is terminated using the internal router on the Total Access 900e and is routed out the local area network (LAN) using one of the Ethernet interfaces (**GIG 0/1** or **ETH 0/1**, **ETH 0/2**). The customer's voice traffic can remain IP, for applications such as hosted IP centrex using IP handsets, or an IP public branch exchange (PBX), and will route out one of the Ethernet interfaces (**GIG 0/1** or **ETH 0/1**, **ETH 0/2**). The customer's voice can also connect to legacy phone systems that are presented as time division multiplexing (TDM), which use the FXS ports or PRI/CAS interfaces (**T1 0/1** through **T1 0/4**). AOS supports the simultaneous use of the IP and TDM interfaces for voice applications.

Shipping Contents

Each Total Access 900e 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* page on the ADTRAN website at http://www.adtran.com/support).

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

- Total Access 900e Series base unit
- A detachable power cable with a grounded IEC three-prong power plug
- Two brackets and four screws
- Quick start guide

Reviewing the Front Panel Design

Figure 1 shows the Total Access 900e Series front panel.

Figure 1. Total Access 900e Series Front Panel Layout

Front Panel Features

Status LEDs

The status LEDs are located on the left side of the front panel. The **VOICE** LED indicates the status of the voice ports. The **STATUS** LED indicates the unit's status. The **GIG 1** LED indicates the status of the Gigabit Ethernet port. The **USB** LED indicates the status of the USB port. The **T1 1** through **4** LEDs reflect the status of the network interfaces. The **ETH 1** and **ETH 2** LEDs reflect the status of the LANs. *Table 1 on page 19* below describes the front panel LEDs.

Reviewing the Rear Panel Design

Total Access 908e Rear Panel Interfaces

Figure 2 shows the Total Access 908e product's rear panel, which contains identical interfaces regardless of the model.

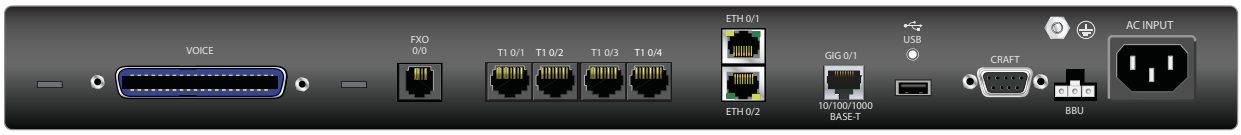

Figure 2. Total Access 908e Rear Panel Layout

VOICE Connection

A single 50-pin female amphenol connector, labeled **VOICE**, provides the interconnect wiring for the analog FXS/FXO circuits. See *Table A-1 on page 33* for voice connector pinouts. The status LED, labeled **VOICE**, is located on the front panel.

> NOTE
>
> *The number of circuits used (1 through 24) is dependent on the Total Access 900e Series model. FXO interfaces use circuits 17 through 24 depending on the model.*

FXO 0/0 Interface

The **FXO 0/0** interface is an RJ-11 connector and provides a single analog trunk for local call routing. See *Table A-2 on page 32* for the FXO port pinouts.

Network Interfaces

The network interfaces (**T1 0/1** through **T1 0/4**) interfaces are DS1 RJ-48C pin connections. See *Table A-3 on page 32* for the network interface pinouts. The status LEDs, labeled **T1 1** through **4**, are located on the front panel.

10/100Base-T Ethernet Interfaces and LEDs

The Ethernet ports (**ETH 0/1** and **ETH 0/2**) are RJ-48 connectors. The status LEDs, labeled **ETH 1** and **ETH 2**, are located on the front panel.See *Table A-4 on page 32* for the Ethernet port pinouts.

10/100/1000Base-T Ethernet Interface

The Gigabit Ethernet port (**GIG 0/1**) is an RJ-48C connector. That status LED, labeled **GIG 1** is located on the front panel. See *Table A-5 on page 33* for the Gigabit Ethernet port pinouts.

USB Interface (Future Release)

The **USB** interface is Type A USB host connector and is provided for use with 3G/4G modems or flash drives. The status LED, labeled **USB**, is located on the front panel. A USB power switch is used to limit the current drawn by a device connected to the USB port.

CRAFT Interface

The **CRAFT** interface is an EIA-232 serial port (DCE) that provides for local management and configuration (using a DB-9 female connector). *Table A-6 on page 33* 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 25* for connection details.

Battery Backup Connection

An optional battery backup unit (P/N 1200641L1) is available for use in case of power outages. The battery backup unit connects to the **BBU** port, which also charges the unit during operation. 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 26* for a more details.

Power Connection

The rear panel has a power input to a 120 VAC power supply with an IEC connector. The appropriate three-prong cable is included in the shipment. Refer to *Supplying Power to the Unit on page 25* for connection details.

Total Access 916e and Total Access 924e Rear Panel Interfaces

Figure 3 shows the Total Access 916e and Total Access 924e products' rear panel, which contains identical interfaces regardless of the model.

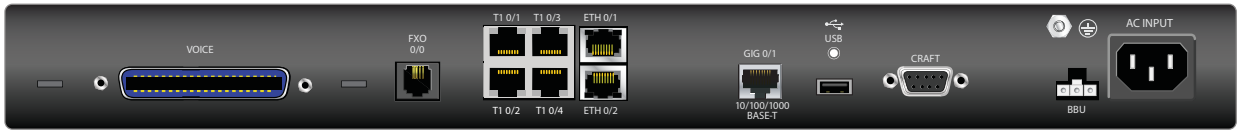

Figure 3. Total Access 916e/924e Rear Panel Layout

VOICE Connection

A single 50-pin female amphenol connector, labeled **VOICE**, provides the interconnect wiring for the analog FXS/FXO circuits. See *Table A-1 on page 33* for voice connector pinouts. The status LED, labeled **VOICE**, is located on the front panel.

> NOTE
> *The number of circuits used (1 through 24) is dependent on the Total Access 900e Series model. FXO interfaces use circuits 17 through 24 depending on the model.*

FXO 0/0 Interface

The **FXO 0/0** interface is an RJ-11 connector and provides a single analog trunk for local call routing. See *Table A-2 on page 32* for the FXO port pinouts.

Network Interfaces

The network interfaces (**T1 0/1** through **T1 0/4**) interfaces are DS1 RJ-48C pin connections. See *Table A-3 on page 32* for the network interface pinouts. The status LEDs, labeled **T1 1** through **4**, are located on the front panel.

10/100Base-T Ethernet Interfaces and LEDs

The Ethernet ports (**ETH 0/1** and **ETH 0/2**) are RJ-48 connectors. The status LEDs, labeled **ETH 1** and **ETH 2**, are located on the front panel.See *Table A-4 on page 32* for the Ethernet port pinouts.

10/100/1000Base-T Ethernet Interface

The Gigabit Ethernet port (**GIG 0/1**) is an RJ-48C connector. That status LED, labeled **GIG 1** is located on the front panel. See *Table A-5 on page 33* for the Gigabit Ethernet port pinouts.

USB Interface (Future Release)

The **USB** interface is Type A USB host connector and is provided for use with 3G/4G modems or flash drives. The status LED, labeled **USB**, is located on the front panel. A USB power switch is used to limit the current drawn by a device connected to the USB port.

CRAFT Interface

The **CRAFT** interface is an EIA-232 serial port (DCE) that provides for local management and configuration (using a DB-9 female connector). *Table A-6 on page 33* shows the **CRAFT** port pinouts.

> NOTE
> *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 25* for connection details.

Battery Backup Connection

An optional battery backup unit (P/N 1175044L1/L2) is available for use in case of power outages. The battery backup unit connects to the **BBU** port, which also charges the unit during operation. 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 26* for a more details.

Power Connection

The rear panel has a power input to a 120 VAC power supply with an IEC connector. The appropriate three-prong cable is included in the shipment. Refer to *Supplying Power to the Unit on page 25* for connection details.

LED Descriptions

The following table describes LED activity.

Table 1. Front Panel LED Descriptions

LED	Color	Indication
STATUS	Off	Unit is not receiving power.
	Green (flashing)	On power up, the **STATUS** LED flashes rapidly for five seconds, during which time the user may escape to boot mode from the **CONSOLE** port.
	Green (solid)	Power is on and the unit is functioning normally.
	Amber (solid)	Power has failed and the unit is in battery backup mode.
	Red	Power is on, but the self-test failed.
VOICE	Off	All ports are inactive or administratively disabled.
	Green (flashing)	At least one port is ringing.
	Green (solid)	At least one port is off-hook.
	Amber (solid)	Port is in test mode.
	Red	Alarm or fault condition is occurring on the port interface.
USB	Off	Interface is shut down or not connected.
	Green (solid)	A supported device is connected.
	Amber (flashing)	There is activity on the link.
GIG 1	Off	Port is inactive or administratively disabled.
	Green (solid)	The link is up.
	Amber (flashing)	There is activity on the link.
T1 1 through **4**	Off	All ports are inactive or administratively disabled.
	Green (solid)	Data T1 is up with Layer 2, PRI T1 is up with D-channel, RBS is up with Layer 1.
	Green (flashing)	Data T1 is up with Layer 2 down, PRI T1 is up with D-channel down.
	Amber (solid)	T1 is in test mode.
	Red	Alarm or fault condition is occurring on the port interface.
ETH 1/**ETH 2**	Off	LAN is administratively disabled or link is down.
	Green (solid)	The link is up.
	Amber (flashing)	There is activity on the link.

3. PRODUCT SPECIFICATIONS

The Total Access 900e Series products have the following features:

- 8, 16, or 24 FXS ports
- 16 FXS ports and 9 FXO ports
- 1 built-in FXO lifeline on the rear panel (F2 models only)
- 4 T1 WAN (RJ-48C) interfaces
- 1 routed 10/100/1000Base-T Ethernet port
- 2 routed auto MDI/MDIX 10/100Base-T Ethernet ports (RJ-48C)
- EIA-232 craft port (DCE) provided for local management
- USB port (host mode only)
- Up to 60 channels of VoIP; simultaneous TDM to IP conversions
- Stateful inspection firewall
- IPsec VPN (50 tunnels minimum)
- DES, 3DES, and AES encryption for IPsec VPN traffic
- QoS/NAT/DHCP client, server, and relay
- Supports SIP trunks
- Supports PPP, Multilink PPP, Frame Relay, Multilink Frame Relay, and HDLC
- Three-way conferencing
- Caller ID, call waiting, call transfer, message waiting, distinctive ringing, and star codes
- Fax and analog modem compatible (V.29, V.32, V.32bis, V.34, V.90, V.92)
- Local station-to-station calls
- Up to 30 channels of ITU T.38
- Up to 60 channels of G.711 (µ-law)
- Up to 60 channels of G.726
- Up to 60 channels of G.729
- 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
- User-friendly GUI and a familiar CLI
- SNMP
- LEDs for system status information
- Chassis dimensions (Total Access 908e): 1.75-inch H x 17.0-inch W x 8.0-inch D
- Chassis dimensions (Total Access 916e/924e): 1.75-inch H x 17.0-inch W x 8.0-inch D
- AC power: 120 VAC, 60 Hz
- Optional battery backup (1200641L1): 12 VDC (Total Access 908e)
- Optional battery backup (1175044L1/L2): -48 VDC (Total Access 916e/924e)
- Operating temperature: 32°F (0°C) to +122°F (+50°C)

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 14* before getting started. The instructions are presented as follows:

- *Tools Required on page 21*
- *Mounting Options on page 22*
- *Grounding Instructions on page 24*
- *Supplying Power to the Unit on page 25*

For information on Total Access 900e 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.

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

- *The Total Access 900e Series is intended to be installed, maintained, and serviced by qualified service personnel only.*
- *Ethernet cables are intended for intrabuilding use only. Connecting an ADTRAN unit directly to Ethernet cables that run outside the building in which the unit is housed will void the user's warranty and could create a fire or shock hazard. To connect an ADTRAN unit to Ethernet cables that run outside the building, 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.*

Tools Required

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

- Two wood screws, 3/32-inch to 1/8-inch (1-inch or greater length)
- Drill and drill bit set
- Screwdriver (medium)
- 25-pair male amphenol cable (customer connection)
- Selected punch-down block and tool

- *To access the CLI of the Total Access 900e, 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 Forum.*
- *Refer to your Total Access 900e Series quick start guide shipped with your unit or available online at ADTRAN's Support Forum for instructions on how to access the GUI and the CLI.*

Mounting Options

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

Wall Mounting Total Access 900e Series

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

- *To avoid damaging the unit, use only the screws included in the shipment when attaching mounting ears to the chassis.*
- *When wall mounting the NetVanta, 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 socket-outlet must be installed near the equipment and must be easily accessible.*

Instructions for Wall Mounting Total Access 900e Series	
Step	**Action**
1	Attach the rack mounting brackets rotated 90 degrees so the rackmount tab (two screw holes) is parallel with the top of the unit (see *Figure 4 on page 23*)
2	Decide on a location for the Total Access 900e 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 900e Series can only be wall mounted with the front panel facing to the right, to the left, or downward (see the example in Figure 4 on page 23).* ***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 (1-inch or greater in length) wood screws through the unit's brackets and into the mounted board (see *Figure 4 on page 23*).
5	Proceed to the steps given in *Grounding Instructions on page 24*.

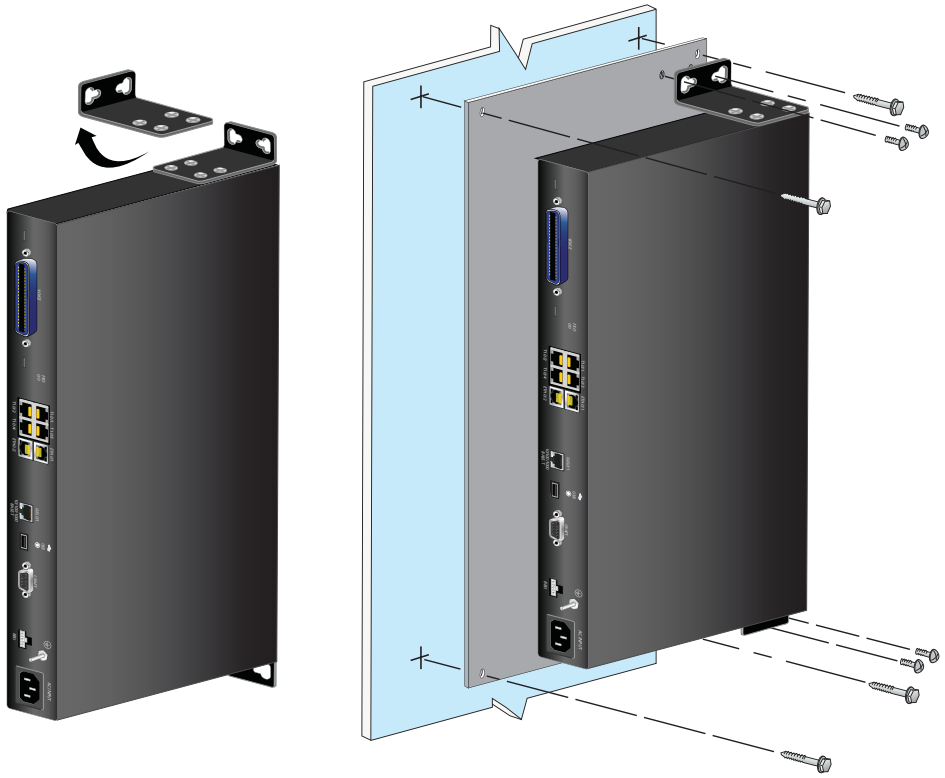

Figure 4. Wall Mounting the Unit

Rack Mounting Total Access 900e Series

The Total Access 900e Series products are housed in a 1U-high, rack-mountable chassis that can be installed into 19-inch or 23-inch equipment racks using the brackets shipped with the unit.

The Total Access 900e Series products mount and connect with standard fasteners and hand tools.

NOTE	*ADTRAN recommends 1U (1.75 inches) of separation above and below the Total Access 900e Series unit. This spacing allows the unit to dissipate heat. The design of the Total Access 900e 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 900e 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 900e Series	
Step	**Action**
1	Position the Total Access 900e 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 900e Series will be positioned.
2	Have an assistant hold the unit in position as you install two mounting bolts through the unit's brackets and into the equipment rack.
3	Proceed to *Grounding Instructions on page 24*.

Grounding Instructions

The following provides grounding instructions for the Underwriters' Laboratory UL 60950 Standard for Safety of Information Technology Equipment Including Electrical Business Equipment, with revisions dated March 15, 2002.

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 number 8 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 (AMP P/N 59250 T-EAD Crimping Tool or equivalent).

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.

Supplying Power to the Unit

As shipped, each Total Access 900e Series product is set to factory default conditions. After installing the unit, the Total Access 900e 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 900e Series comes equipped with a 120 VAC, 60 Hz power supply. The maximum power consumption is 110 W. A grounded, three-plug detachable 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 number 8 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 (AMP P/N 59250 T-EAD Crimping Tool or equivalent).*
- *The supplementary equipment earthing conductor must not be smaller in size than cross-sectional area of not less than 2.5 mm^2, 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.*

5. BATTERY BACKUP UNIT

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

Total Access 908e BBU (P/N 1200641L1)

The BBU connects to the Total Access 908e 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.

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

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

Total Access 916e/924e BBU (P/N 1175044L1/L2)

The BBU connects to the Total Access 916e/924e 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) or 23-inch (P/N 1175048L1) rackmount adapter brackets. The 1175044L2 is an equivalent BBU with a hinged front access door.

Features of the BBU, P/N 1175044L1/L2, include the following:

- No-spill battery design
- Compact wallmount or rackmount box
- Double BBU rack mounting available
- 7 Ahr battery (up to 8 hours of backup, depending on load)
- Modular plug (provides quick and easy installation)
- All 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.

BBU Safety Notices

CAUTION

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 908e BBU (1200641L1)

Figure 5 shows the BBU mounting dimensions for the Total Access 908e.

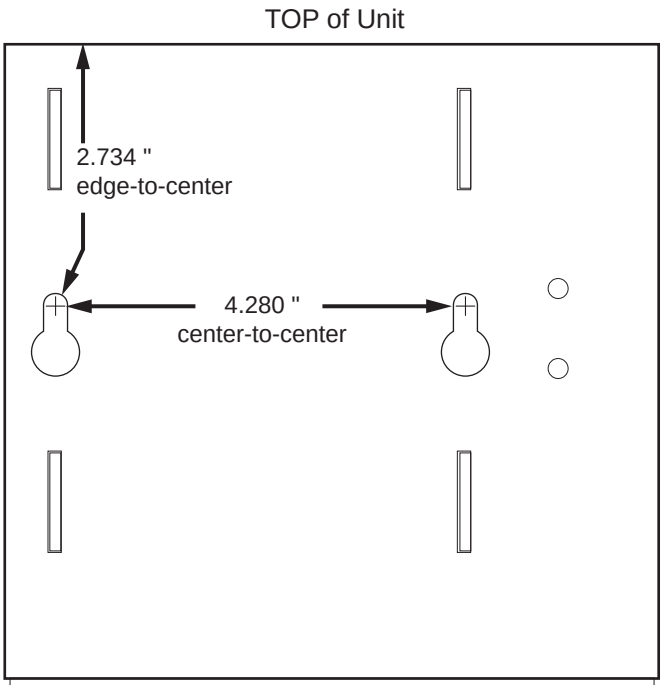

Figure 5. Wall Mounting the 1200641L1 BBU

For a wallmount installation, the BBU installs on heavy plywood (3/4-inch minimum) using two #10 x 3/4-inch pan-head wood screws. 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 1/16 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.
6	Use cable ties as appropriate. The battery connection from the BBU should be directly connected to the **BATT** port on the rear of the chassis.

Wall Mounting the Total Access 916e/924e BBU (1175044L1/L2)

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

Figure 6 shows the BBU mounting dimensions for the Total Access 916e/924e.

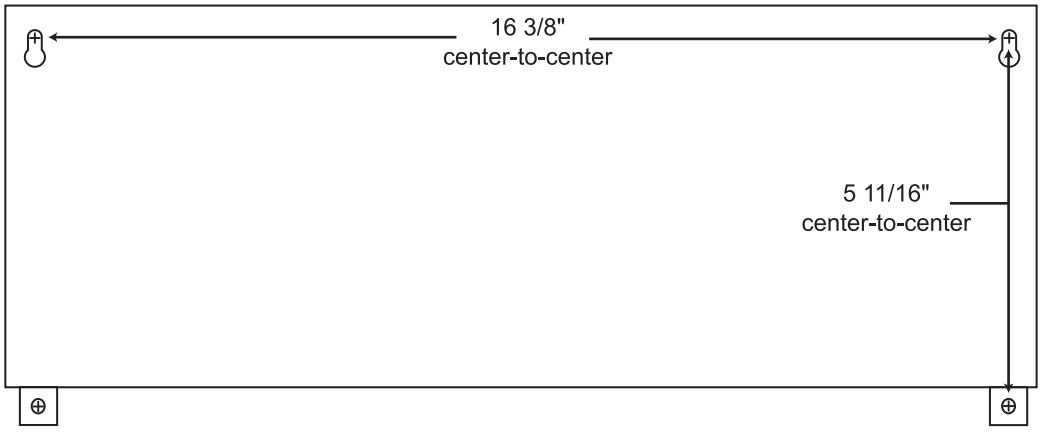

Figure 6. Wall Mounting the 1175044L1/L2 BBU

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

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.

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 **BATT** port on the rear of the chassis.

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 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. (Enter the document number in the search field to display a link to the document.)

Specifications

Table 2 provides BBU specifications.

Table 2. BBU Specifications

Battery	
Part Number: Suppliers: Batteries: Voltage: Backup Time: Wire Gauge:	311212V02 YUASA and Panasonic 7 Ahr per battery -12 VDC per battery Up to 8 hours 18 AWG
Environmental	
Operating Temperatures: Preferred:	Charge: -15°C to 50°C Discharge: -20°C to 60°C 20°C
Physical Dimensions	
P/N 1175044L1/L2: Weight:	17-inch W x 6.5-inch H x 3.5-inch D 30 lb

Your Total Access 900e 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 Forum For details on the CLI, refer to the *AOS Command Reference Guide*. All other related documents are also available online on ADTRAN's Support Forum.

APPENDIX A. PIN ASSIGNMENTS

The following tables provide the pin assignments for the base 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	FXO 0/0	FXO 0/0 Ring, Tip

Table A-2. FXO 0/0 Pinouts

Pin	Name	Description
1, 2	—	Unused
3	Ring	Ring lead of the 2-wire interface
4	Tip	Tip lead of the 2-wire interface
5, 6	—	Unused

Table A-3. NET 1 through NET 4 (T1 0/1 through T1 0/4) 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. 10/100Base-T (ETH 0/1 through ETH 0/2) Pinouts

Pin	Name	Description
1	TX1	Transmit Positive
2	TX2	Transmit Negative
3	RX1	Receive Positive
4, 5	—	Unused
6	RX2	Receive Negative
7, 8	—	Unused

Table A-5. 1000Base-T Gigabit Ethernet Port Pinouts

Pin	Name	Description
1	TRD0+	Transmit/Receive Positive
2	TRD0-	Transmit/Receive Negative
3	TRD1+	Transmit/Receive Positive
4	TRD2+	Transmit/Receive Positive
5	TRD2-	Transmit/Receive Negative
6	TRD1-	Transmit/Receive Negative
7	TRD3+	Transmit/Receive Positive
8	TRD3-	Transmit/Receive Negative

Table A-6. 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

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

