

TeleLite™

6-position Shelf, model 720000 Description and Installation Guide

925W720106-04E



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Chapter 1

General Information

1.1 Publication Information

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**TeleLite 6-position Shelf
Description and Installation Guide**

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Disclaimer Notice

Although Positron Inc. has made every effort to ensure the accuracy of the information contained herein, this document is subject to change without notice.

1.2 About this Guide

This guide introduces you to the TeleLite 6-position Shelf model 720000, and describes how to install it. This guide was designed to be read from beginning to end.

1.2.1 Related Documentation

The other guides in the TeleLite set are listed below. To order any manuals, please contact your customer service representative.

- 720001 TeleLite Access Interface Card

1.2.2 Positron Products and Services

Positron engineers and manufactures high voltage isolation products to protect personnel and telecommunications circuits in high voltage areas that are susceptible to the effects of Ground Potential Rise (GPR).

Positron is the leader in isolation technology with its Teleline wireline products and TeleLite optical fiber wireline isolation/protection product families. Positron provides total flexibility in product configuration – from standalone units protecting a single circuit to high-capacity, multi-shelf HVI preconfigured systems.

Positron also provides a wide range of consulting, analysis and training services for communications companies, public safety and security organizations and electrical utilities.

Full details and contact information are available at www.PositronPower.com

1.3 Compliance Information

1.3.1 FCC Part 15

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.

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

1.3.2 Product Safety

This equipment is compliant with CSA CAN/CSA-C22.2 No. 60950-1-03

1.3.3 NEBS Compliance

This equipment has been tested and found to comply with the following Telcordia specifications:

- GR-63-CORE
- GR-1089-CORE
- GR-487-CORE

1.4 Service and Support

Table 1: Positron Contact Information

General information:	Positron Inc. 5101 Buchan Street, Suite 220 Montreal, Quebec, Canada H4P 2R9 US and Canada: 1-888-577-5254 International: 1-514-345-2220 Fax: 514-345-2271 E-mail: info@positronpower.com Website: www.positronpower.com
Customer Service and Repairs:	US and Canada: 1-888-577-5254 International: 1-514-345-2220 E-mail: customerservice@positronpower.com

1.4.1 Technical Customer Support

Positron is committed to providing excellent ongoing technical support to its customers. A team of specialists is always available for telephone consultations or for on-site visits to assist in the maintenance and troubleshooting of Positron equipment.

For pricing information or assistance in the planning, configuration and implementation of the installation of equipment, contact Technical Customer Service.

1.4.2 Customer Training

Full customer training courses on High Voltage Interface (HVI) are also available. For more information, contact Positron.

1.4.3 Repair Service

All warranty repairs are performed at no cost. Positron reserves the right to repair or replace any equipment that has been found to be defective.

For information about out-of-warranty repairs, contact Positron's Repair Department. Due to the varied nature of repairs, no specific turnaround can be guaranteed, but average turnaround time is 20 working days from date of receipt. In emergency situations, special arrangements can be made. All repaired items are warranted for a period of 90 days.

Before returning any items to Positron for repair, warranty repair or replacement, call the Repair department to obtain a Return Material Authorization (RMA) number. Parts returned without RMA numbers cannot be accepted. The RMA number must always be clearly marked on all boxes, crates, and shipping documents. Bulk repairs (more than five items) will require additional processing time, so please take this into consideration when requesting an RMA number.

To accelerate the repair process, whenever possible, include a report detailing the reason for return with the unit(s). Also, please include the name and phone number of a person who can be contacted should our Repair department need further information.

When packing items being returned for repair, please ensure they are properly packed to avoid further damage. TeleLite plug-in cards should never be shipped while installed in a shelf; this will cause damage that can extend the repair period.

1.5 TeleLite Warranty

Subject to the provisions of this paragraph, Positron warrants that the equipment shall perform in accordance with Positron's specifications. The warranty remains valid for one (1) year from the date of shipment. The warranty fully covers workmanship, materials and labor. Positron shall, at its sole discretion, repair or replace the problem unit.

Freight costs to ship defective equipment to Positron are borne by the Customer, with return of replaced or repaired equipment to be at Positron's expense.

1.5.1 Limitation of Liability

Subject to anything to the contrary contained herein, Positron's sole obligation and liability and the customer's sole remedy for Positron's negligence, breach of warranty, breach of contract or for any other liability in any way connected with or arising out of, the equipment or any services performed by Positron shall be as follows:

- In all situations involving performance or non-performance of the equipment or any component thereof, the customer's sole remedy shall be, at Positron's option, the repair or replacement of the equipment or said component.
- For any other claim in any other way related to the subject matter of any order under, the customer shall be entitled to recover actual and direct damages; provided that Positron's liability for damages for any cause whatsoever, and regardless of the form of the action, whether in contract or in tort (including negligence), shall be limited to the value of the order.

Positron shall not be obligated to repair or replace any item of the equipment which has been repaired by others, abused or improperly handled, improperly stored, altered or used with third party material or equipment, which material, or equipment may be defective, of poor quality or incompatible with the equipment supplied by Positron, and Positron shall not be obligated to repair or replace any component of the equipment which has not been installed according to Positron specifications.

IN NO EVENT SHALL POSITRON BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL, PUNITIVE, EXEMPLARY OR SIMILAR OR ADDITIONAL DAMAGES INCURRED OR SUFFERED INCLUDING LOSS OF PROFITS, LOSS OF REVENUES, LOSS OF DATA, LOSS OF

BUSINESS INFORMATION, LOSS OF GOODWILL, LOSS OF EXPECTED SAVINGS OR BUSINESS INTERRUPTION ARISING OUT OF OR IN CONNECTION WITH THE EQUIPMENT, A PURCHASE ORDER SUPPLIES, MAINTENANCE SERVICES OR OTHER SERVICES FURNISHED HEREUNDER, EVEN IF POSITRON HAS BEEN ADVISED OR IS AWARE OF THE POSSIBILITY OF SUCH DAMAGES.

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1.5.2 Cancellation and Rescheduling Charges

Should the customer cancel, prior to shipment, any part of an order, the customer agrees to pay to Positron cancellation charges, not as a penalty, which shall total all expenses, including labor expenses, incurred by Positron prior to said cancellation. Equipment that has been specially developed for the customer's specific applications shall not be subject to cancellation. Cancellation or rescheduling is not permissible after shipment of the System.

Chapter 2

Overview

2.1 TeleLite Shelf Introduction

The TeleLite system is divided into two parts: the **CO side unit** and the **Station side unit**. Each unit is composed of one TeleLite 6-position Shelf model 720000 shelf. Each shelf has:

- Six slots for plug-in line cards and one slot for a power connection.
- A motherboard, which provides power and alarm connections and does not provide for any telecom connections since all connections (except local power) will be made directly to the RJ-11/RJ-45 connectors, located on the front panel of each card.

The Station side unit can be located inside or outside the building.

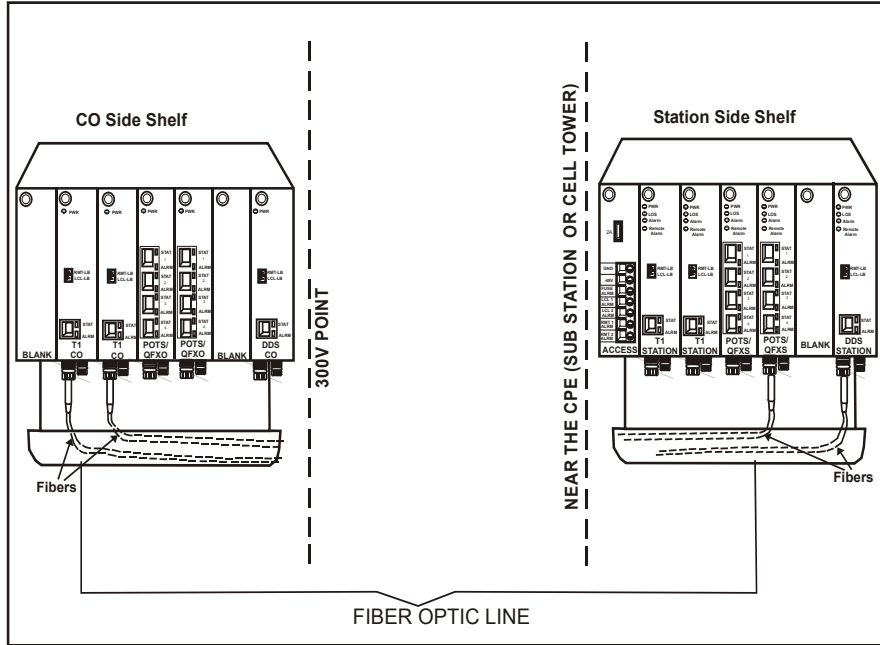
The CO side unit must be located outside and far enough from the Station side so that the GPR does not increase above 300 V with respect to the CO. When installed outside, the shelf should be housed in an appropriate enclosure.

NOTE

For an illustration of a CO side and Station side shelf layout, see Figure 1 on page 15.

For installation instructions, see section 3.2 on page 23.

Figure 1: Example of a CO Side and Station Side Shelf Layout



NOTE

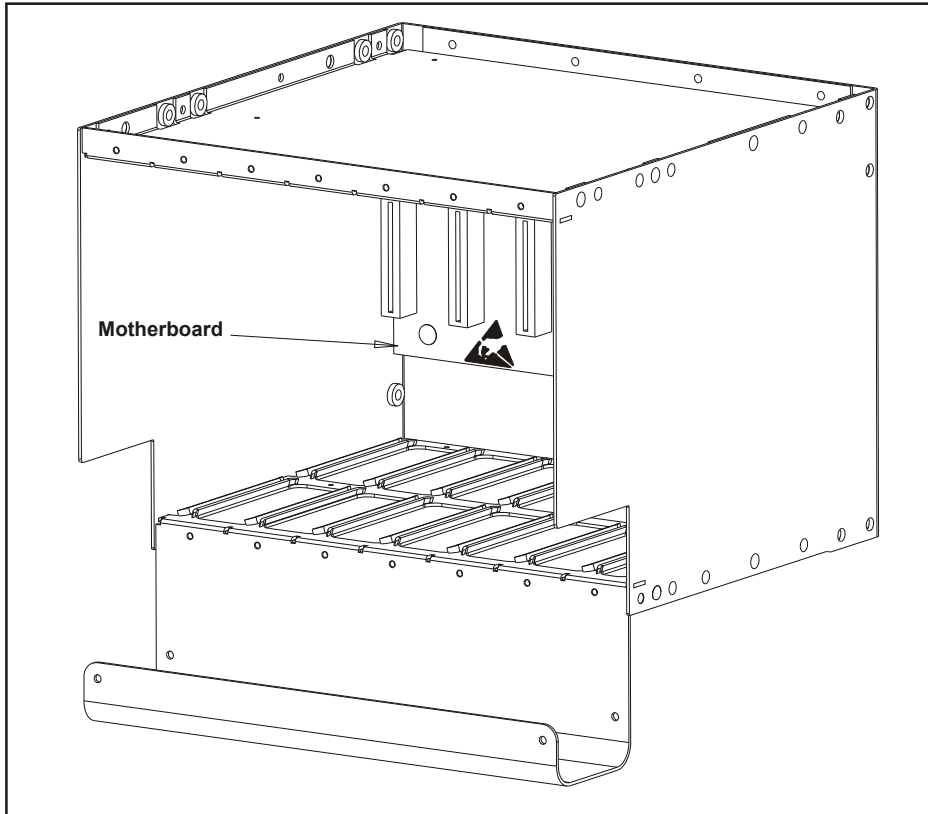
Any slot in the shelf not used by a circuit card requires a blank face plate (model 719999).

2.2 Motherboard

The motherboard is located inside the shelf. It has seven identical edge connectors, one for each slot. Each connector provides power and alarm connections. For an illustration, see Figure 2.

For a list of CO and Station side pinout functions, see Table 2 on page 17.

Figure 2: Motherboard Positioned Inside a Shelf



NOTE

The motherboard in the CO side shelf and the motherboard in the Station side shelf are the same.

Table 2: Motherboard Edge Connector Pin-outs

Pin Number	Function (CO Side)	Function (Station side)
1	Chassis	Chassis
2	Chassis	Chassis
3	NC	NC
4	NC	NC
5	RTN	RTN
6	RTN	RTN
7	-48 Vdc	-48 Vdc
8	-48 Vdc	-48 Vdc
9	Not used	Local Alarm (normally open)
10	Not used	Local Alarm (normally open)
11	Not used	Remote Alarm (normally open)
12	Not used	Remote Alarm (normally open)
13	Spare	Spare
14	Spare	Spare
15	Spare	Spare
16	Spare	Spare
17	NC	NC
18	NC	NC
19	Chassis	Chassis
20	Chassis	Chassis

2.3 Installation Bracket Kit Model Numbers

For indoor installations, the 6-position shelf can be installed using one of the bracket kits listed in Table 3 below. For ordering information, see section 1.4 on page 9.

Table 3: Indoor Installation Bracket Kit Model Numbers

Bracket Kit Model Number	Installation Type
719998	1 shelf (wall-mount)
719998	2 shelves (wall-mount)
719998	2 shelves (19" rack-mount)
719997	1 shelf (19" rack-mount)
719996	1 shelf (23" rack-mount)

For outdoor installations, the 6-position shelf must be housed in a weather resistant cabinet. Positron offers pre-configured cabinet units.

For information, refer to the *TeleLite Pre-configured Cabinets, Description and installation guide*.

2.4 Shelf Specifications

Table 4: Environmental Specifications

Parameter	Specification
Operating Temperature	-40°C to 60°C (-40°F to 140°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity (non-condensing)	15% to 90%
Altitude	-61 to 3965 m (-200 to 13,000 ft) above sea level

NOTE

The operating temperature specified in Table 4 is the maximum ambient temperature with any combination of TeleLite cards in the shelf.

Table 5: Mechanical Specifications

Parameter	Specification
Shelf Dimensions (approx.)	25.4 cm (10") deep x 4 U high, 20.3 cm (8") wide for 7 slots
Shelf Weight	2.3 kg (5 lbs)
Shelf Material	Stainless steel
Number of Slots	6 for line cards, 1 for Access card

Chapter 3

Installation

3.1 Installation Options

The Station side unit can be installed indoors or outdoors in a proper enclosure. See section 3.1.1 below.

The CO side unit must be installed outdoors in a proper enclosure. See section 3.1.2.

3.1.1 Indoor Installation

When a shelf is installed indoors, it can be mounted on one of the following:

- On a wall
- On a 19" rack
- On a 23" rack
- On a pre-configured backboard unit

NOTE

Bracket kits for an indoor installation must be ordered separately. For bracket kit information, see Table 3 on page 18.

3.1.2 Outdoor Installation

For outdoor installations, the shelf must be housed in a weather resistant cabinet that meets the GR-487 requirements for telecom plant equipment.

Positron offers pre-configured cabinet units, which can be:

- Pole-mounted
- Pad-mounted
- Wall-mounted
- Mounted on a pedestal.

For information, refer to the *TeleLite Pre-configured Cabinets, Description and Installation guide*.

NOTE

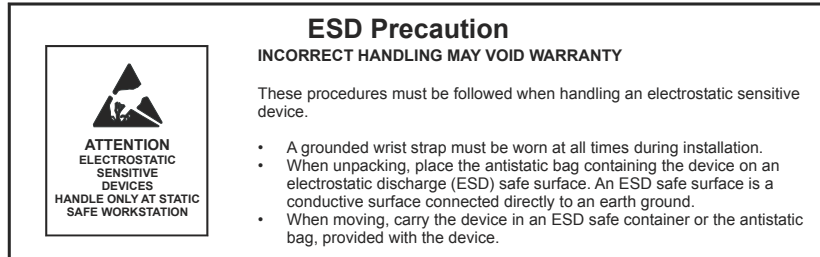
Pre-configured cabinets must be ordered separately. For ordering information, see section 1.4 on page 9.

3.2 Installing a 6-position Shelf

A shelf must be properly installed before plug-in cards can be inserted.

Follow the ESD precautions shown in Figure 3.

Figure 3: ESD Precautions



NOTE

Note the following pre-mounting considerations for all shelf installations:

1. Installations should conform to local practices.
2. Equipment must be installed in a restricted area.
3. The CO side must be located far enough from the Station side so that the GPR does not increase above 300 V with respect to the CO.
4. Minimum aisle clearance of 76 cm (2' 6") is required in front of the equipment. Rear access is not required, since all connections are on the bottom-front of the shelf.
5. Equipment should not be installed in the direct path of air conditioning or heating ducts. Use a deflector plate to direct airflow away from equipment, if necessary.
6. Equipment temperature is between -40°C to 60°C (-40°F to 140°F), and the shelf metallic surface may be hot (> 70°C or > 158°F).
7. AC power should be available for test equipment, power tools, etc.
8. Adequate lighting should be provided.
9. Local power of 48 Vdc is required.
10. A fuse and alarm panel may be required.

3.2.1 Installing a Shelf on a Wall

NOTE

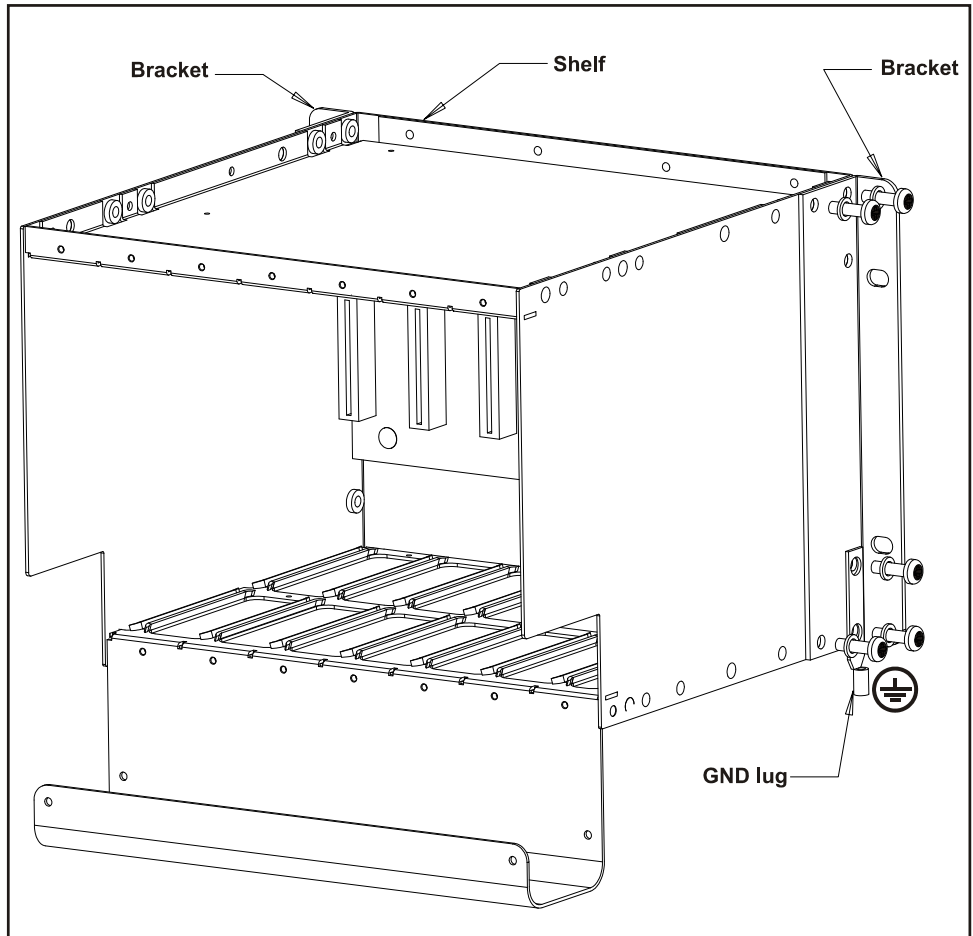
Before you install a shelf on a wall, make sure you have the following:

- TeleLite shelf assembly
- Installation brackets and screws (bracket kit model 719998)
- Appropriate ESD strap and anti-static mat
- Screwdrivers (flat-head and Phillips-head)
- Wire/line cutter (or appropriate pliers)
- Wire strippers
- Closed (ring) or open-end connectors for terminal block connections (optional)
- Crimper tool for the ground lug
- Wood screws, toggle bolts (for drywall), or concrete-type wall fasteners (for cement walls)
- Awl or drill with assorted wood or cement bits

► To Install a Shelf on a Wall

1. Attach the brackets (using wall-mount bracket kit model 719998) to the shelf, making sure the screws are firmly secured.

**Figure 4: Bracket Locations for a Wall-mount Installation
(using bracket kit model 719998)**



2. Determine where you want to mount the shelf:
 - Ensure that the assembly will be mounted in a location that provides unobstructed access. There must be enough room to allow access to the cards, and adequate space must be left around multiple shelf installations to allow for cable access and ventilation.
3. Mark drill holes for the mounting hardware:
 - Have one person hold the shelf at the exact installation location on the wall, while another person levels the shelf and uses the mounting holes to mark drill holes.
4. Drill holes:
 - Gently set aside the shelf and drill holes to accommodate the mounting screws or fastening hardware. The size of the holes, and the fastening hardware vary according to the wall type; see Table 6.

Table 6: Drilling Holes for Different Wall Types

Wall type	Instructions
Plywood (wood studs preferred)	Choose a drill bit with a slightly smaller diameter than the wood mounting screws and drill all holes to a depth slightly less than the screw length.
Drywall	Use the chosen toggle bolt to check the hole diameter. The correct hole size is obtained when the toggle bolt, in the closed position (with wings folded), fits very snugly into the hole.
Concrete	Use a concrete drill bit with a diameter that will enable the wall fastener to fit very snugly into the finished hole. Drill each hole to the depth of the fastener. Insert the fastener into the hole and tap it in place with a hammer, if necessary.

5. Hold the shelf in place while driving all screws into the wall, to firmly secure the shelf against the wall.

NOTE

Positron recommends a #10 screw for this installation.

6. Ground the shelf. Go to section 3.3 on page 43.

NOTE

The wall-mount bracket kit must be installed before installing the ground lug on the shelf.

3.2.2 Installing Two Shelves Side by Side on a Wall

A dual installation requires attaching two shelves side by side before installing on a wall.

To install two shelves side by side on a wall, use installation bracket kit model 719998.

NOTE

Before you install shelves on a wall, make sure you have the following:

- TeleLite shelf assembly
- Installation brackets and screws (bracket kit model 719998)
- Appropriate ESD strap and anti-static mat
- Screwdrivers (flat-head and Phillips-head)
- Wire/line cutter (or appropriate pliers)
- Wire strippers
- Closed (ring) or open-end connectors for terminal block connections (optional)
- Crimper tool for the ground lug
- Wood screws, toggle bolts (for drywall), or concrete-type wall fasteners (for cement walls)
- Awl or drill with assorted wood or cement bits

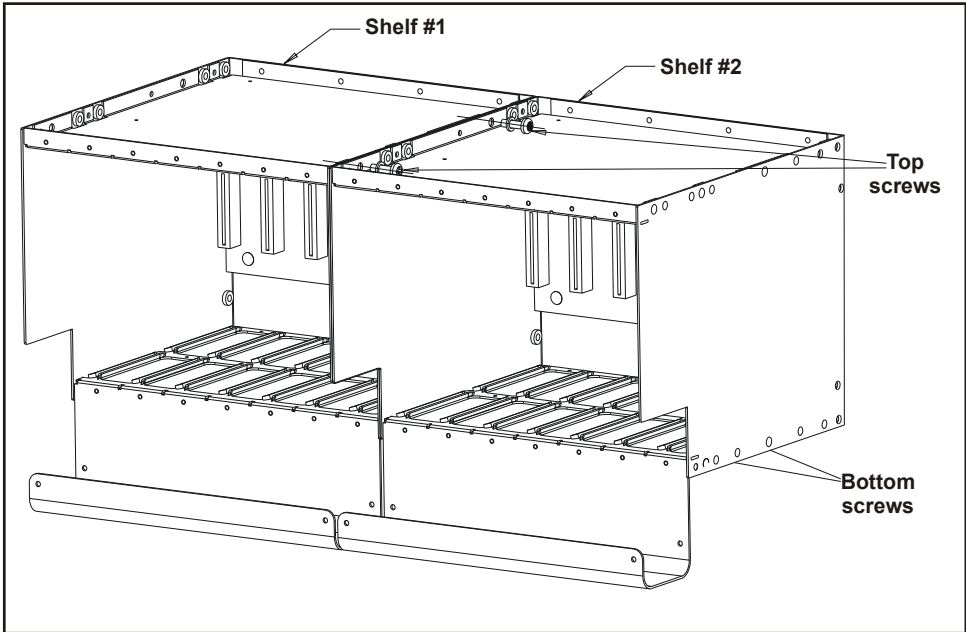
► **To Install Two Shelves Side by Side on a Wall**

1. Attach two shelves side by side using the hardware provided in the installation bracket kit (wall-mount bracket kit model 719998), making sure the two top and two bottom screws are firmly secured. See Figure 5.

NOTE

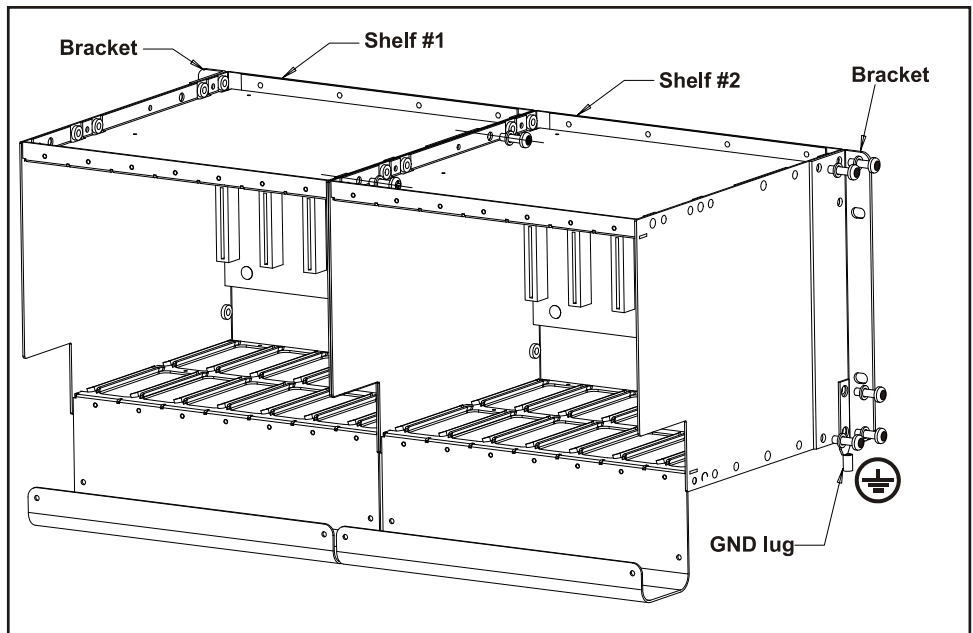
Make sure that the top and bottom screws (not shown in figure) are firmly fastened before continuing.

Figure 5: Screw Location for Securing Two Shelves Side by Side on a Wall



2. Attach the brackets (using wall-mount bracket kit model 719998) to the shelf assembly, making sure the screws are firmly secured.

Figure 6: Dual Wall-mount Installation



3. Determine where you want to mount the shelf assembly:
 - Ensure that the assembly will be mounted in a location that provides unobstructed access. There must be enough room to allow access to the cards, and adequate space must be left around multiple shelf installations to allow for cable access and ventilation.
4. Mark drill holes for the mounting hardware:
 - Have one person hold the shelf assembly at the exact installation location on the wall, while another person levels the shelf and uses the mounting holes to mark drill holes.

5. Drill holes:

- Gently set aside the shelf and drill holes to accommodate the mounting screws or fastening hardware. The size of the holes, and the fastening hardware vary according to the wall type; see Table 7.

Table 7: Drilling Holes for Different Wall Types

Wall type	Instructions
Plywood (wood studs preferred)	Choose a drill bit with a slightly smaller diameter than the wood mounting screws and drill all holes to a depth slightly less than the screw length.
Drywall	Use the chosen toggle bolt to check the hole diameter. The correct hole size is obtained when the toggle bolt, in the closed position (with wings folded), fits very snugly into the hole.
Concrete	Use a concrete drill bit with a diameter that will enable the wall fastener to fit very snugly into the finished hole. Drill each hole to the depth of the fastener. Insert the fastener into the hole and tap it in place with a hammer, if necessary.

6. Hold the shelf assembly in place while driving all screws into the wall, to firmly secure the it against the wall.

NOTE

Positron recommends a #10 screw for this installation.

7. Ground the shelf assembly. Go to section 3.3 on page 43.

NOTE

The wall-mount bracket kit must be installed before installing the ground lug on the shelf.

3.2.3 Installing a Shelf on a 19" Rack

NOTE

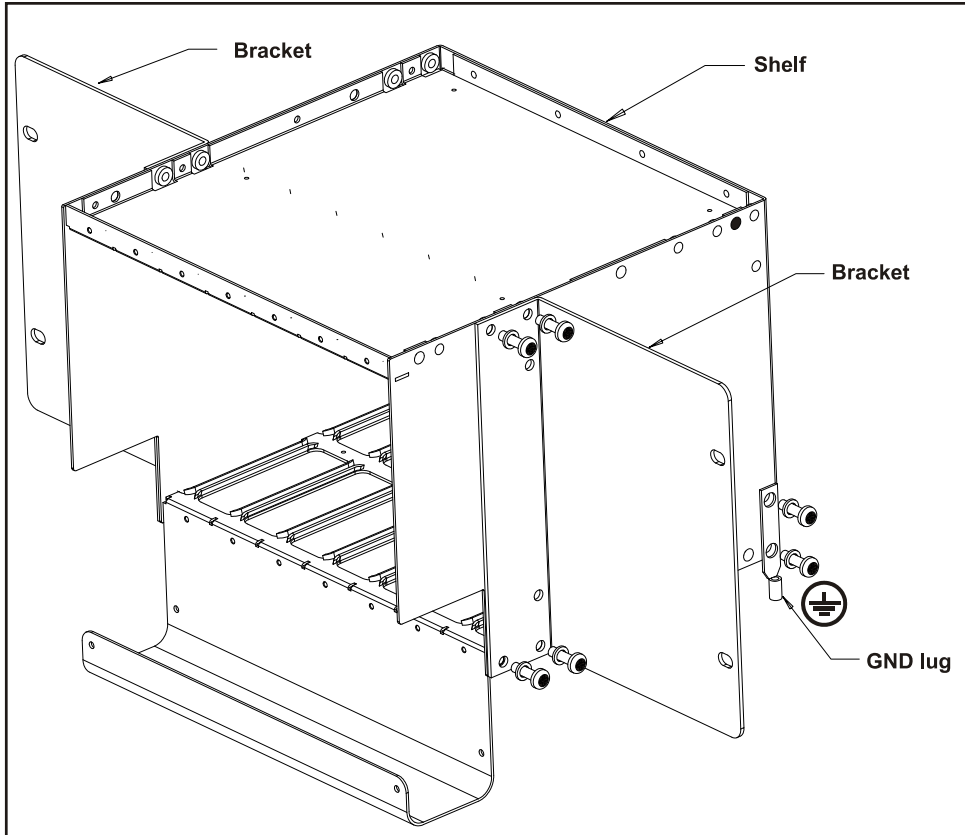
Before you install a shelf on a 19" rack, make sure you have the following:

- TeleLite shelf assembly
- Installation brackets and screws (bracket kit model 719997)
- Appropriate ESD strap and anti-static mat
- Screwdrivers (flat-head and Phillips-head)
- Wire/line cutter (or appropriate pliers)
- Wire strippers
- Closed (ring) or open-end connectors for terminal block connections (optional)
- Crimper tool for the ground lug
- Screws to mount assembly to the H-frame rack

► **To Install a Shelf on a 19" Rack**

1. Attach the brackets (using 19" rack-mount bracket kit model 719997) to the shelf, making sure the screws are firmly secured.

**Figure 7: Bracket Locations for a 19" Rack-mount Installation
(using bracket kit model 719997)**



2. Ground the shelf assembly. Go to section 3.3 on page 43.

NOTE

- The rack-mount bracket kit must be installed before installing the ground lug on the shelf.
- Due to the limited working space, Positron recommends that the ground lug be installed and wired before you install the shelf in an H-frame rack. See section 3.3 on page 43.

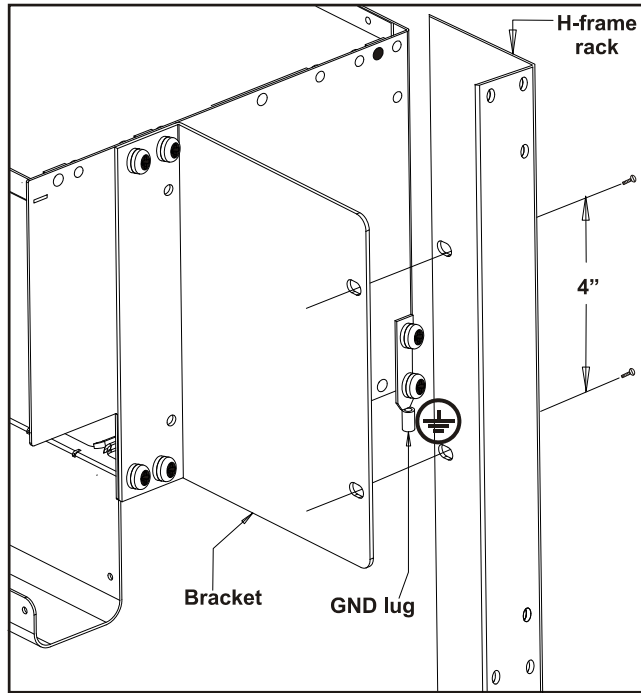
3. Determine mounting location in rack:

- Ensure that the shelf will be mounted in a location that allows access to the cards, and leave adequate vertical space between multiple installations to allow cable access and ventilation.

4. Attach shelf to the 19" rack:

- Position the shelf into the appropriate mounting space within the rack. Align the holes of the mounting brackets with the holes in the H-frame rack. Secure the shelf to the rack using the hardware provided in the installation bracket kit. See Figure 8.

Figure 8: Attaching the Shelf to H-Frame Rack



3.2.4 Installing a Shelf on a 23” Rack

NOTE

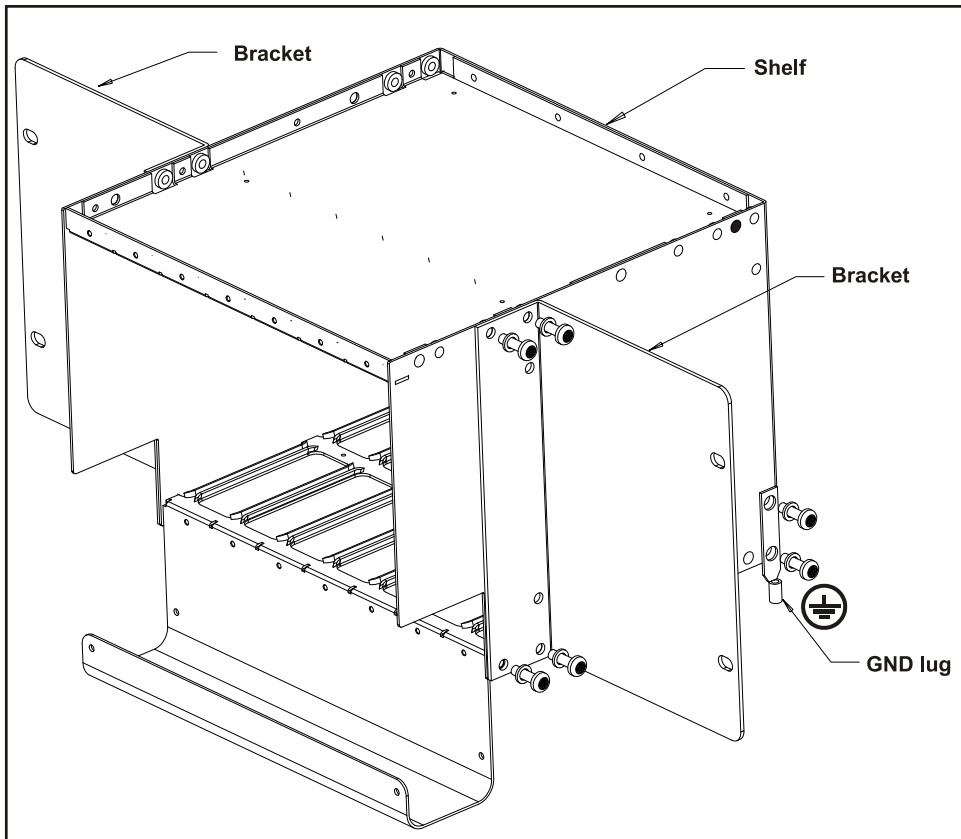
Before you install a shelf on a 23” rack, make sure you have the following:

- TeleLite shelf assembly
- Installation brackets and screws (bracket kit model 719996)
- Appropriate ESD strap and anti-static mat
- Screwdrivers (flat-head and Phillips-head)
- Wire/line cutter (or appropriate pliers)
- Wire strippers
- Closed (ring) or open-end connectors for terminal block connections (optional)
- Crimper tool for the ground lug
- Screws to mount assembly to the H-frame rack

► To Install a Shelf on a 23" Rack

1. Attach the brackets (using 23" rack-mount bracket kit model 719996) to the shelf, making sure the screws are firmly secured.

**Figure 9: Bracket Locations for 23" Rack-mount Installations
(using bracket kit model 719996)**



2. Ground the shelf assembly. Go to section 3.3 on page 43.

NOTE

- The rack-mount bracket kit must be installed before installing the ground lug on the shelf.
- Due to the limited working space, Positron recommends that the ground lug be installed and wired before you install the shelf in an H-frame rack. See section 3.3 on page 43.

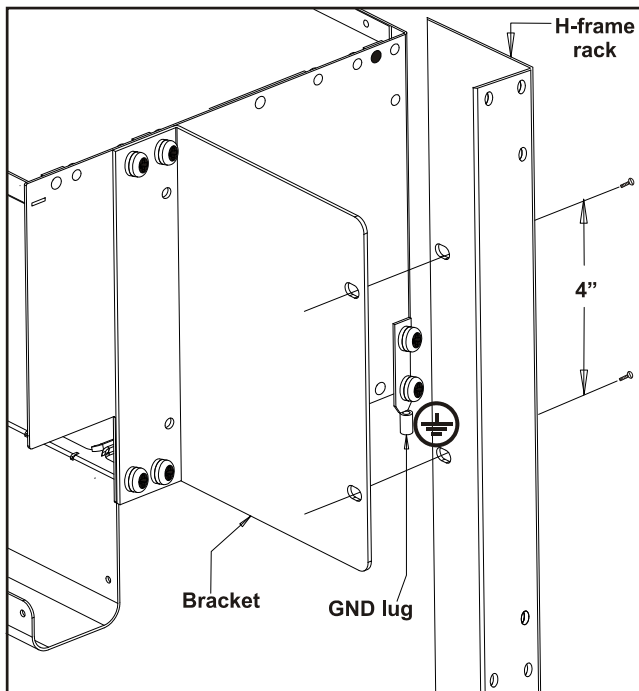
3. Determine mounting location in rack:

- Ensure that the shelf will be mounted in a location that allows access to the cards, and leave adequate vertical space between multiple installations to allow cable access and ventilation.

4. Attach shelf to the 23" rack:

- Position the shelf into the appropriate mounting space within the rack. Align the holes of the mounting brackets with the holes in the H-frame rack. Secure the shelf to the rack using the hardware provided in the installation bracket kit. See Figure 10.

Figure 10: Attaching the Shelf to H-Frame Rack



3.2.5 Installing Two Shelves Side by Side on a 19" Rack

A dual installation requires attaching two shelves side by side before installing on a 19" rack (this option is not available for installing on a 23" rack).

To install two shelves side by side on a 19" rack, use installation bracket kit model 719998.

NOTE

Before installing two shelves on a 19" rack, make sure you have the following:

- TeleLite shelf assembly
- Installation brackets and screws (bracket kit model 719998)
- Appropriate ESD strap and anti-static mat
- Screwdrivers (flat-head and Phillips-head)
- Wire/line cutter (or appropriate pliers)
- Wire strippers
- Closed (ring) or open-end connectors for terminal block connections (optional)
- Crimper tool for the ground lug
- Screws to mount assembly to the H-frame rack

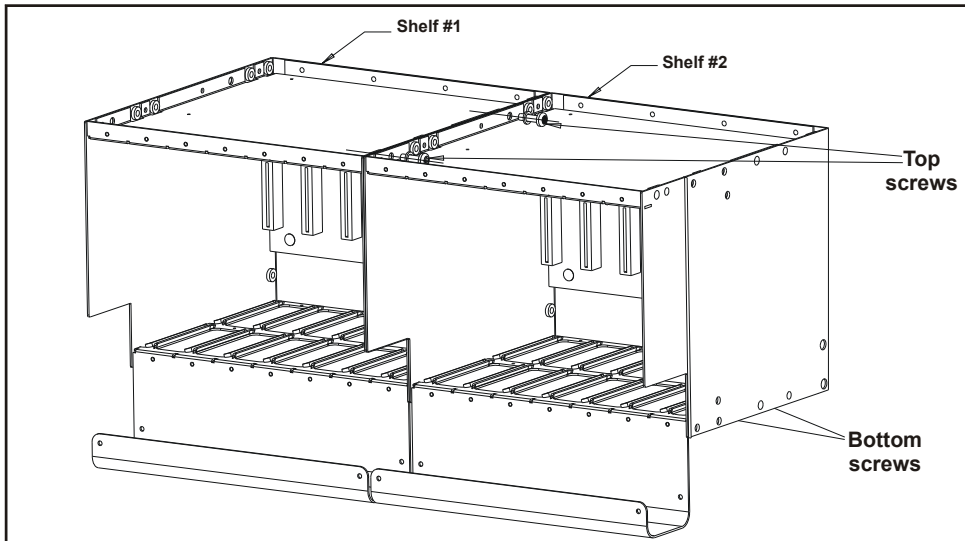
► To Install Two Shelves Side by Side on a 19" Rack

1. Attach two shelves side by side using the hardware provided in the installation bracket kit (rack-mount bracket kit model 719998), making sure the two top and two bottom screws are firmly secured. See Figure 11.

NOTE

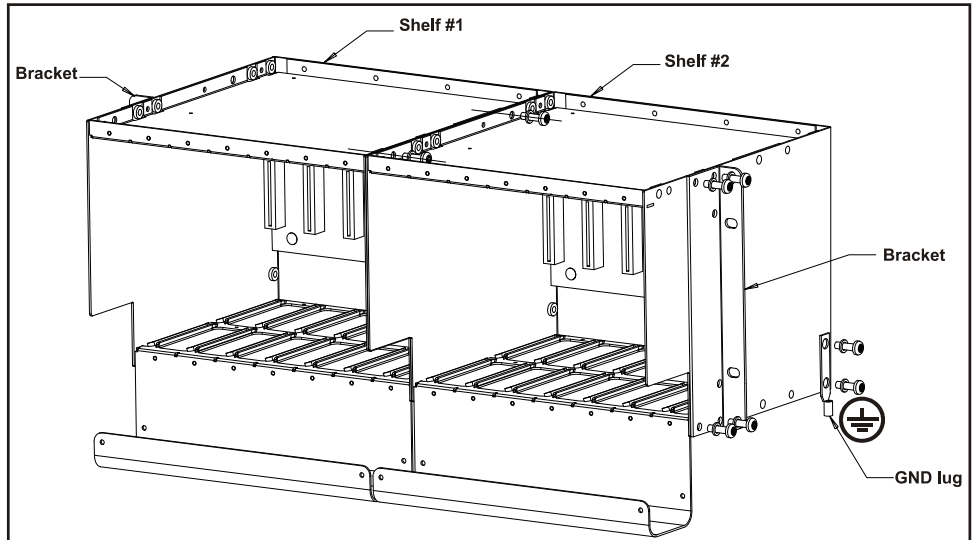
Make sure that the top and bottom screws (not shown in figure) are firmly fastened before continuing.

Figure 11: Screw Locations on a Dual 19" Rack-mount Installation



2. Attach the brackets (using rack-mount bracket kit model 719997) to the shelf, making sure the screws are firmly secured. See Figure 12.

Figure 12: Dual 19" Rack-mount Installation



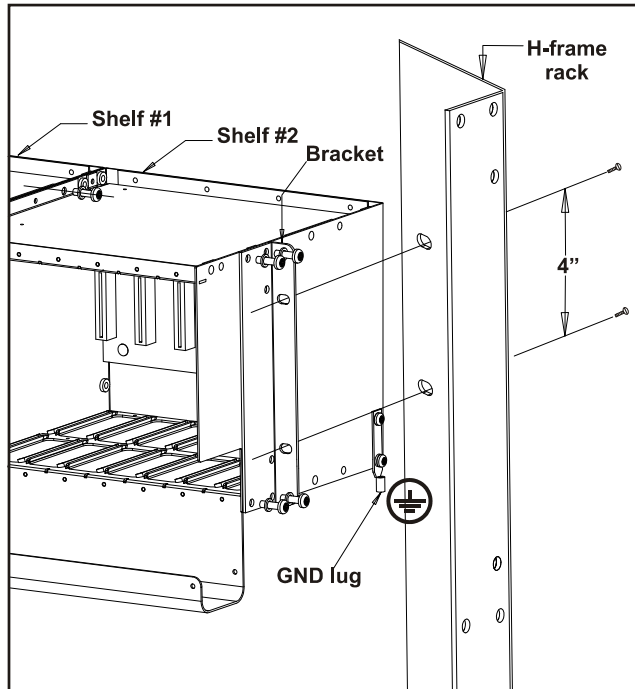
3. Ground the shelf assembly. Go to section 3.3 on page 43.

NOTE

- The rack-mount bracket kit must be installed before installing the ground lug on the shelf.
 - Due to the limited working space, Positron recommends that the ground lug be installed and wired before you install the shelf in an H-frame rack. See section 3.3 on page 43.
4. Determine mounting location in rack:
 - Ensure that the shelf will be mounted in a location that allows access to the cards, and leave adequate vertical space between multiple installations to allow cable access and ventilation.

5. Attach shelf assembly to the 19" rack:
 - Position the shelf into the appropriate mounting space within the rack. Align the holes of the mounting brackets with the holes in the H-frame rack. Secure the shelf to the rack using the screws provided in the bracket kit. See Figure 13.

Figure 13: Attaching the Shelf to H-Frame Rack



3.3 Grounding a Shelf

The TeleLite shelf comes with a ground wire. One end of the ground wire has a two-hole lug (shelf side) and the other end, a single-hole lug.

CAUTION

HIGH LEAKAGE CURRENT: Earth connection essential before making telecommunication network connections.

NOTE

- All shelves must be permanently connected to earth.
- The ground wire must be of gage AWG #6, color green with a yellow stripe.

► To Ground a Shelf

1. Attach the brackets to the shelf. If you are installing:
 - One shelf on a wall, see section 3.2.1 on page 24.
 - Two shelves side by side on a wall, see section 3.2.2 on page 27.
 - One shelf on a 19" rack, see section 3.2.3 on page 31.
 - One shelf on a 23" rack, see section 3.2.4 on page 35.
 - Two shelves side by side on a 19" rack, see section 3.2.5 on page 39.
2. Connect the ground lug on the shelf using the hardware provided in the installation bracket kit.
 - To locate where the ground lug must be installed in a wall-mount installation type, see Figure 14 on page 45.
 - To locate where the ground lug must be installed on a 19" or 23" rack-mount installation type, see Figure 15 on page 46.
3. Connect the single-hole ground lug to one of the following:
 - H-frame rack with separate screw, star washer and nut (this hardware is not provided)
 - Earth ground
 - Power supply common ground
4. Stick the label (provided in the installation bracket kit) on the same side of the shelf as the ground lug.

NOTE

The ground lug can be installed on the right or left side of a shelf.

Figure 14: Ground Lug Location for a Wall-mount Installation

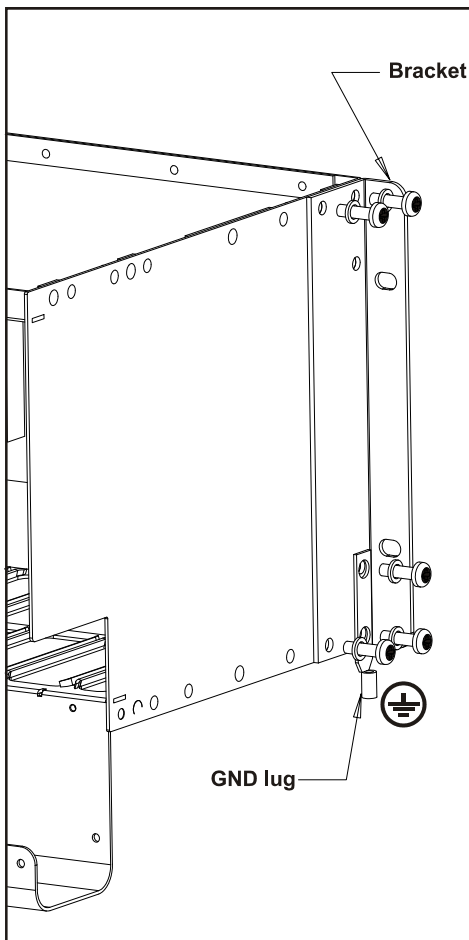
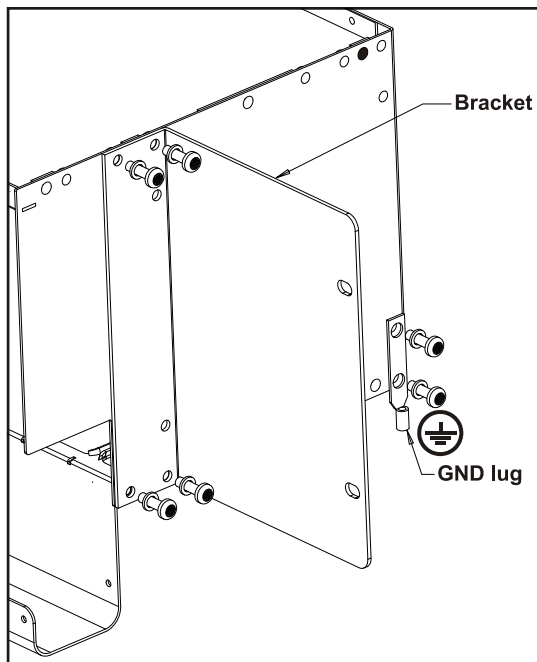


Figure 15: Ground Lug Location for a 19" and 23" Rack-mount Installation



Appendix A

Acronyms

Acronyms

AWG	American Wire Gauge
CO	Central Office
DC	Direct Current
ESD	Electro-static Discharge
NC	Not Connected
RTN	Return Conductor