Chapter 4

Powering the Modular Switch

Important! Installation of this equipment must comply with local and national electrical codes. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.

Installation de cet équipement doit être conformes aux codes électriques locaux et nationaux. Si nécessaire, consulter les organismes de réglementation appropriés et des autorités de contrôle pour assurer la conformité.

The switch operates with multiple power supplies. Refer to Table 1-1 on page 3 for information regarding your specific system. Table 4-1 lists the quantity of modules each chassis can contain and the minimum operating requirements for each model.

Table 4-1 Power Supply Capacity and Requirements for 7300 Series Modular Switches

Switch Model	Chassis Capacity	Minimum Operating Requirements
DCS-7304 / DCS-7324 / DCS-7304X3	Front Panel: 4 modules	1 active circuit
DCS-7308 / DCS-7328 / DCS-7308X3	Front Panel: 6 modules	2 active circuits
DCS-7316	Front Panel: 6 modules Rear Panel: 2 modules	3 active circuits

Appendix D displays the location of the power supplies on the front panel of the switch. Appendix E displays the location of power supplies on the rear panel of DCS-7316 switches.

This chapter includes sections that describe procedure for grounding and cabling AC and DC power supplies. After completing the instructions for your switch, proceed to Chapter 5.

Important! Read all installation instructions before connecting the system to the power source.

Lire toutes les instructions d'installation avant de brancher le système à la source d'alimentation.

- **Non-Redundant Configuration:** Provide power to the minimum required power inputs.
- **Redundant Power Supply Configuration:** Connecting power to modules in excess of minimum requirements protects the switch against failed modules and can provide grid-level redundancy.
- **Power down the Switch:** Remove all power cords from the power input sockets.

Important! This equipment must be grounded. Never defeat the ground conductor. This unit requires over-current protection.

Cet équipement doit être mis à la terre. Ne jamais modifier le conducteur de terre. Cet appareil nécessite de protection contre les surintensités.

4.1 Cabling the AC Power Supply

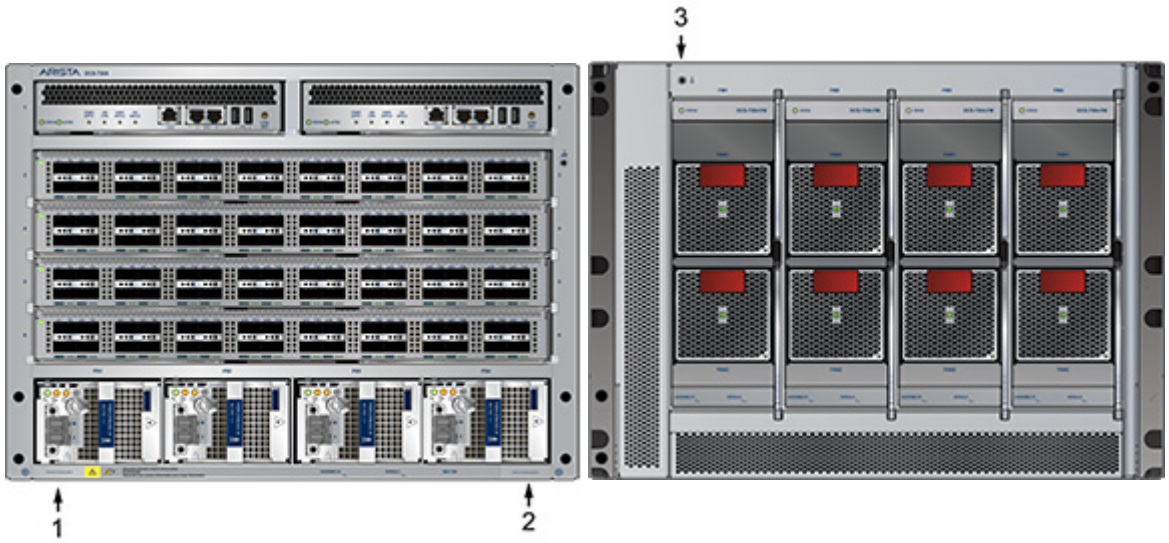
4.1.1 Grounding the Switch

After mounting the switch into the rack, connect the switch to the data center ground. Figure 4-1 displays the location of the grounding pads located on the front panel (left illustration) and rear panel (right illustration). After the switch is grounded, ESD wrist straps can be grounded by connecting them to one of the grounding pads.

Important! Grounding wires and grounding lugs (M4 x 0.7) are not supplied. Wire size should meet local and national installation requirements. Commercially available 6 AWG wire is recommended for installations in the U.S.

À la terre et de mise à la terre fils cosses (M4 x 0.7) ne sont pas fournis. Calibre des fils doit satisfaire des exigences de l'installation locale et nationale. Disponible dans le commerce des câbles 6 AWG sont recommandé pour les installations aux États-Unis.

Figure 4-1: Grounding Pad and ESD Grounding Pad Sockets

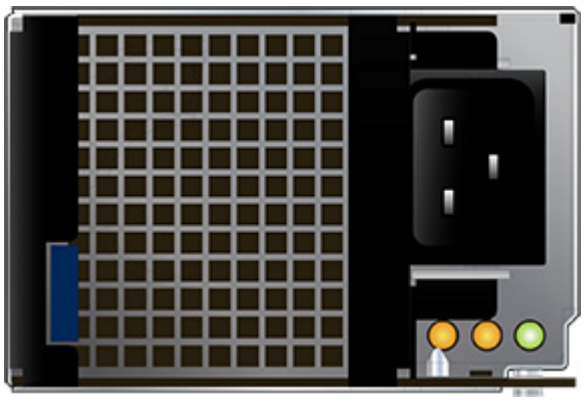


1 Secondary ground
2 Secondary ground
3 Earth grounding pad

4.1.2 Connecting Power Cables to an AC Power Supply

Figure 4-2 on page 25 displays an AC power supply module, including the power input socket.

Figure 4-2: Power Input Sockets



The power supplies require power cables that comply with IEC-320 C19 plug. The accessory kit provides 14 AWG, C19 to C20 power cables.

To insert a power cable:

Step 1 Pull the retaining clip back on each power input socket.

Note The retaining clip is optional (if provided).

Step 2 Plug the power cables into the sockets.

Step 3 Adjust the retaining clips if needed for your power cords (if retaining clip was provided).

Step 4 Push the retaining clip back down over the cable (if retaining clip was provided).

4.2 Cabling the DC Power Supply

Figure 4-3 displays the location of the secondary grounding pads on front panel (left illustration) of the switch chassis. After mounting the switch into the rack, connect the at least one of the secondary grounds to the data center ground. After the switch is grounded, ESD wrist straps can be grounded by connecting them to one of the attach points.

Important! Grounding wires and grounding lugs (M4 x 0.7) are not supplied.
Wire size should meet local and national installation requirements.
Commercially available 4 AWG wire is recommended for installations in the U.S.

À la terre et de mise à la terre fils cosses (M4 x 0.7) ne sont pas fournis. Calibre des fils doit satisfaire des exigences de l'installation locale et nationale. Disponible dans le commerce des câbles 4 AWG sont recommandé pour les installations aux États-Unis.

Important! The -48V and Battery-Return leads are a pair and should run adjacent to each other and be approximately the same length.

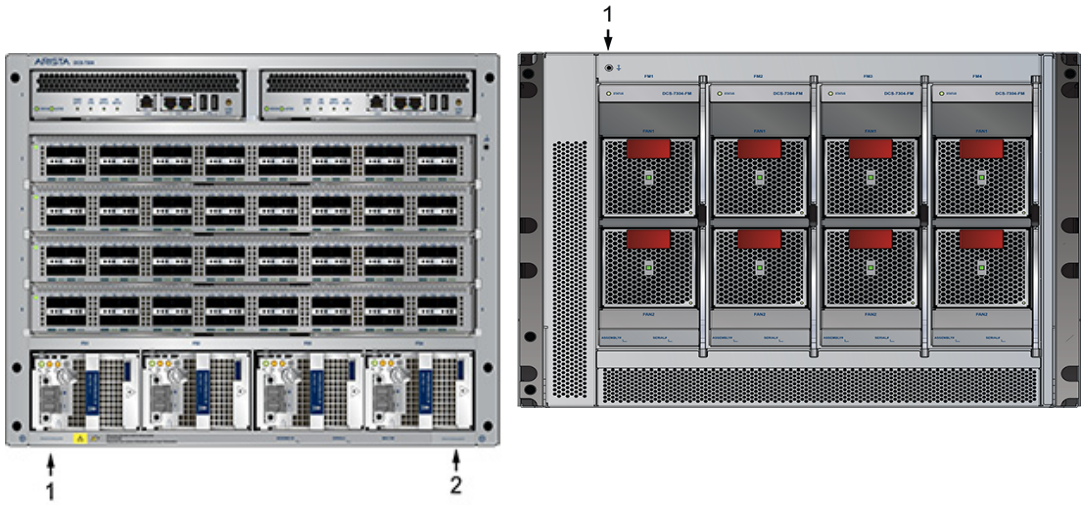
Le - 48V et câbles de batterie-retour sont une paire courir à côté de l'autre et doivent être à peu près la même longueur.

4.2.1 DC Power Supplies

The 7300 Series chassis supports two DC power supplies (Figure 4-4). Only specified power supplies are available for use in a particular switch configuration.

- PWR-2700-DC-R (Figure 4-8)
- PWR-3K-DC-Blue, also referred to as PWR-3K-DC-F (Figure 4-7)

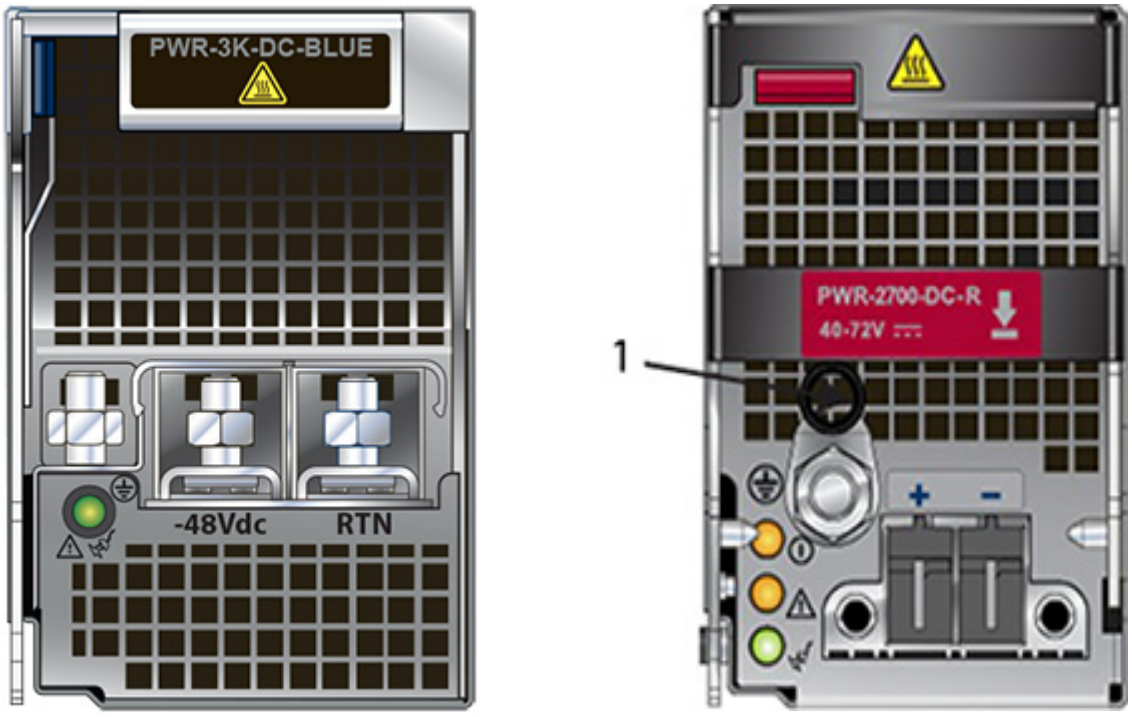
Figure 4-3: Secondary Ground Pads



1 Secondary ground
2 Secondary ground
3 Earth grounding pad

Note The power supply orientation in your device may be different from the one shown in Figure 4-4.

Figure 4-4: PWR-3K-DC-Blue and PWR-2700-DC-R power supplies



1 Primary ground

4.2.2 Wire and Lug Preparation

Before performing any installation actions, ensure power is removed from DC circuits by turning off the power line servicing the circuits. Prepare the stranded wiring before you begin a DC power installation.

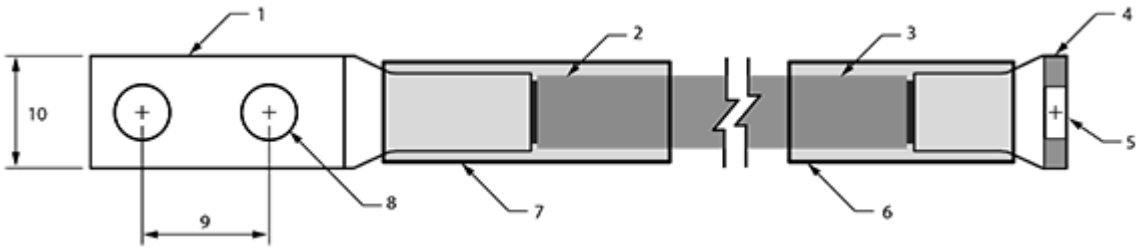
Step 1 Stranded copper wiring is required.

- Commercially available 2 to 4 AWG wire is recommended for installations in the U.S.
- Wire size should meet local and national installation requirements.
- Grounding wires and grounding lugs are not supplied.
- Strip the wires to the appropriate length for the lugs.

The wires connecting the DC power supply to the power source must meet the following requirements:

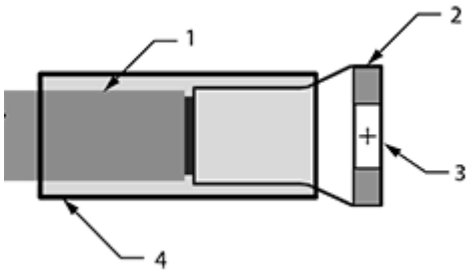
- DC Input Wire Size: 2 – 4 AWG (33.6 mm^2 to 21.2 mm^2).
- Primary Ground Wire Size: 2 – 4 AWG (33.6 mm^2 to 21.2 mm^2) per power supply.
- The conductors are copper.

Figure 4-5: Lugs wiring terminations



1	-48V + RTN lug	5	5/16”	9	5/8”
2	Insulated wire	6	Heat-shrink tubing	10	1/2”
3	Insulated wire	7	Heat-shrink tubing		
4	Ground lug (right angle)	8	1/4”		

Figure 4-6: Ground lug wiring termination (PWR-2700W-DC-R)



1	Insulated wire	3	5/16”
2	Ground lug (right angle)	4	Heat-shrink tubing

Note You can also use a 45° angled connector instead of the straight connector shown.

Step 2 Use agency-approved compression (pressure) lugs for wiring terminations with a single 5/16" mounting hole. Two-hole lugs should have 1/4" mounting holes on 5/8" centers.

The PWR-2700W-DC-R ground lug is a right-angle lug. Check the terminations for the appropriate wire size. Use a ground wire of at least 2 – 4 AWG. Use only copper wire.

Step 3 Slip on heat-shrink tubing on the wire ends before assembling the lugs on to the wire.

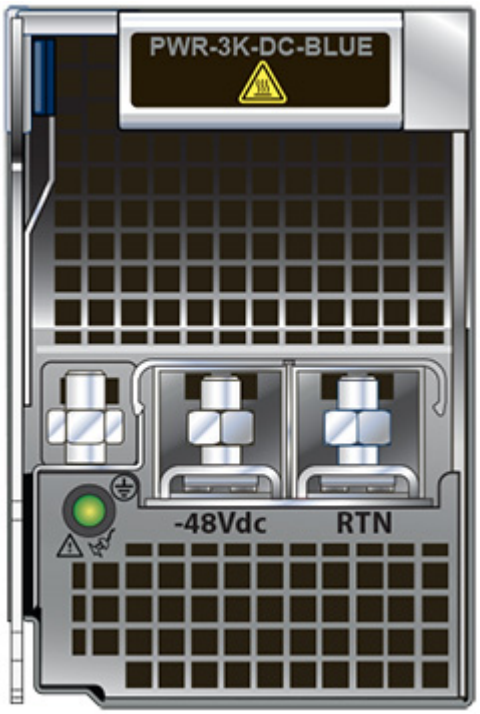
- The lugs must be crimped with the proper tool.
- The tubing should extend over the lug’s barrel and the wire's insulator.

Step 4 Shrink the tubing with a heat gun.

4.2.3 PWR-3K-DC-Blue Power Supply

Figure 4-7 displays the PWR-3K-DC-Blue power supply.

Figure 4-7: PWR-3K-DC-Blue power supply



Step 1 Prepare the stranded wiring, see Section 4.2.2

Step 2 Attach the power cable to the supply terminals.

Step 3 Tightening Torque: 2.7 N-m (24 in.-lbs.)

4.3 DC Power Adapter Installation for PWR-2700-DC-R

4.3.1 Connecting the Power Cable Lug to the Terminal Studs

Step 1 Prepare the stranded wiring, see Section 4.2.2.

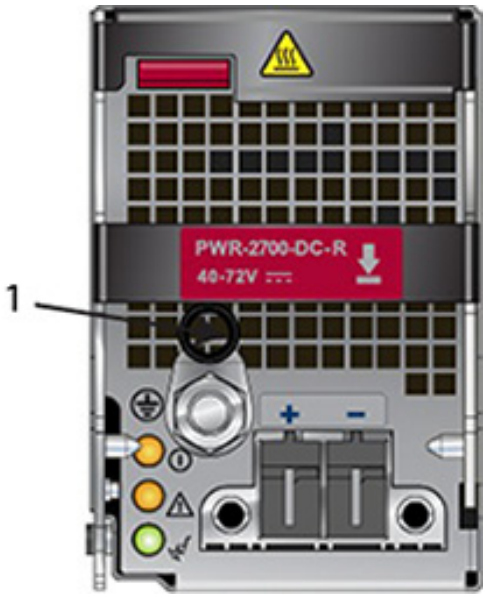
Step 2 Remove the clear plastic cover protecting the terminal studs on the adapter by lifting the small center tab while sliding the cover off the adapter.

4.3.2 Connecting the Ground to PWR-2700-DC-R Power Supply

The primary ground on the system requires a 2 – 4 AWG 5/16 inch lug per power supply.

Figure 4-8 displays the PWR-2700-DC-R power supply without the DC adapter.

Figure 4-8: PWR-2700-DC-R power supply



1 Primary ground

Step 3 Prepare the stranded wiring, see Section 4.2.2.

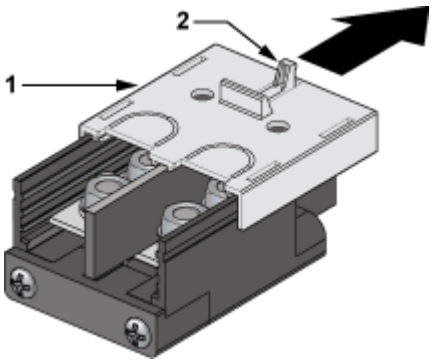
Step 4 Attach the ground cable to the ground stud.

Step 5 Tightening Torque: 2.7 N-m (24 in.-lbs.)

4.3.3 Connecting the Power Cable Lug to the Terminal Studs

Step 1 Prepare the stranded wiring, see Section 4.2.2.

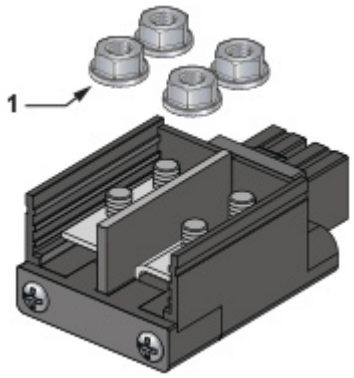
Step 2 Remove the clear plastic cover protecting the terminal studs on the adapter by lifting the small center tab while sliding the cover off the adapter.



1 Plastic cover

2 Center tab

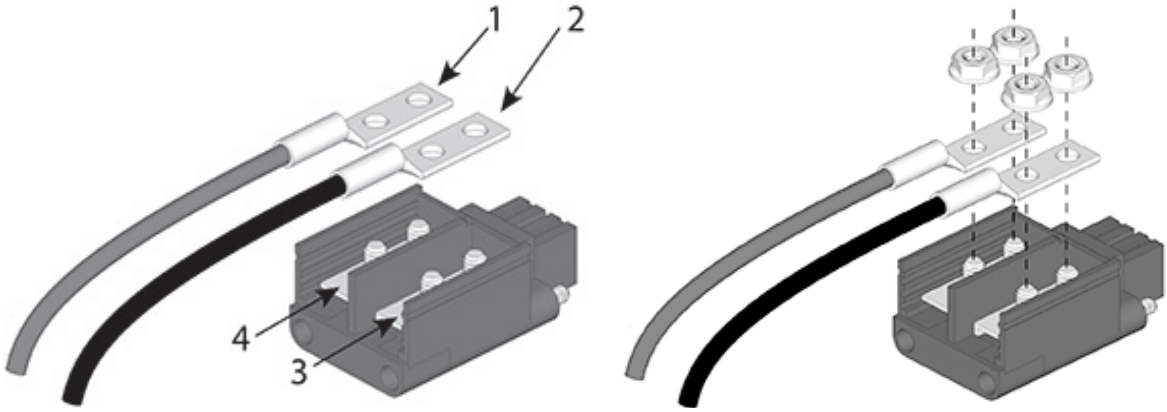
Step 3 Remove the flange locking nuts from each of the terminal studs.



1 Locking nuts

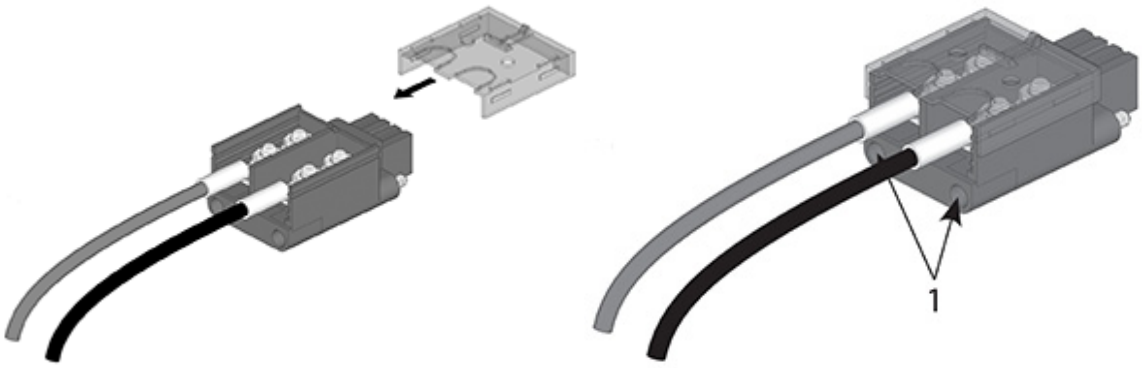
Step 4 Secure each power cable lug to the terminal studs with the flange locking nuts.

- Attach the positive (+) DC source power cable lug to the RTN (return) terminal.
- Attach the negative (–) DC source power cable lug to the –48V (input) terminal.
- Torque the four flange locking nuts to 2.7 N-m (24 in.-lbs.).



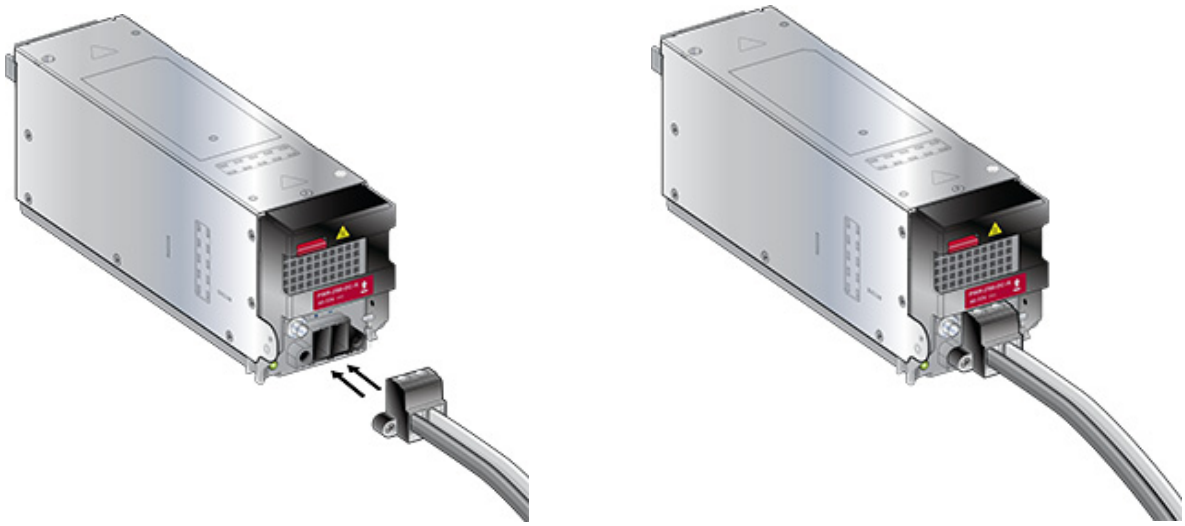
1	Compression lugs	3	-48V
2	Compression lugs	4	RTN

Step 5 Slide the cover over the terminal studs until it clicks into place.



1 Captive screws

Step 6 Insert the adapter into the DC power supply.



Step 7 Tighten the two captive screws (on the bottom of the adapter) to the power supply module. Torque screws with #2 Posidriv to 2 N-m (17.7 in.-lbs.)

Step 8 Attach the power cable to the DC power source.

Important! Apply the ground connection first during installation and remove last when removing power.

Appliquer le motif connexion tout d'abord pendant l'installation et supprimer dernière lors du retrait de puissance.