Powering on the Switch

This chapter describes how to connect the power modules in the chassis and to power on the switch.

Power Module Overview

You can install an AC or a DC power module in the chassis. Ensure all power connection wiring conforms to the rules and regulations in the National Electrical Code (NEC) as well as local codes.

The chassis has a power assembly shelf that supports the following number of power trays:

- Cisco 9808 chassis supports up to three power trays

Each power tray supports up to three AC power modules or four DC power modules.

Note Use only one kind of power tray and power module in the chassis.

Note Use only the same capacity power module in the chassis. Do not mix different capacity power modules.

High-Voltage AC / DC Power Supplies

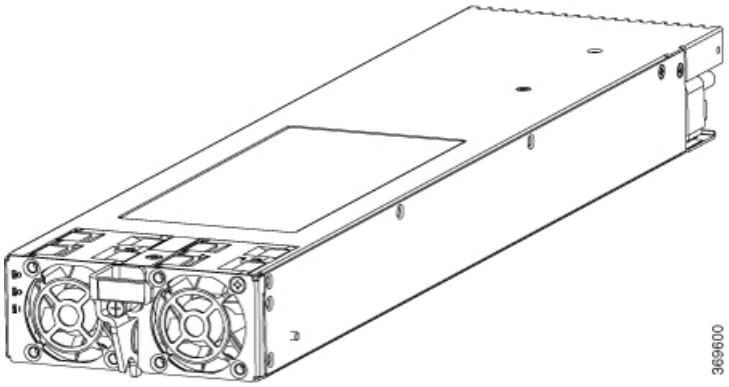
HVAC/HVDC power modules operate in the input range of 180 VAC to 305 VAC (nominal input level of 200 to 240 VAC, 277 VAC) and 192 to 400 VDC (nominal 240 VDC, 380 VDC).

- NXK-HV-6.3KW20A-A: Each 6.3 KW, 20A power module can supply up to 6.3 KW to the power tray when it's supplied by two feeds (A and B). It can supply up to 3.15 KW with only one feed.
- NXK-HV-6.3KW30A-A: Each 6.3 KW, 30A power module can supply up to 6.3 KW to the power tray when it's supplied by two feeds (A and B). It can supply up to 4.8 KW with only one feed.

DC Power Supplies

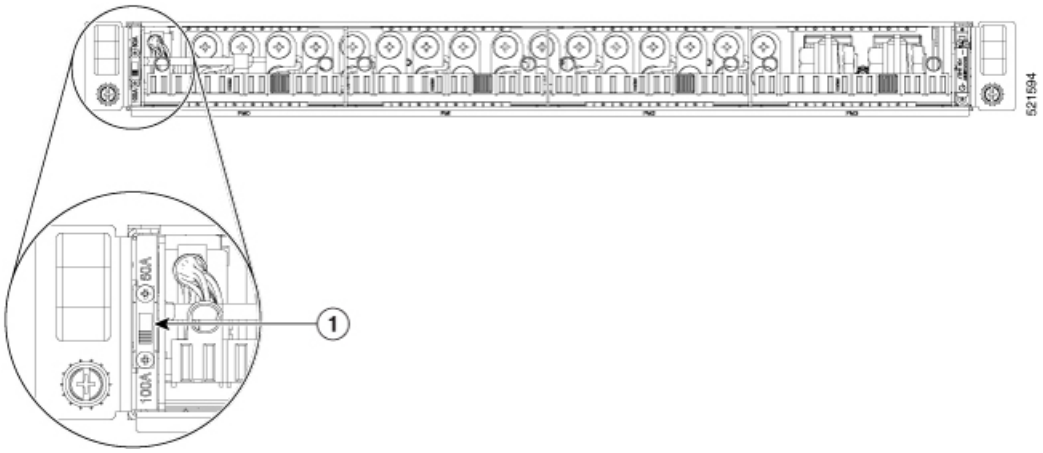
- NXK-DC-4.4KW-A: The 4.4KW power supply that accepts a nominal input voltage of 48V 60A DC, with an operational tolerance range of -40 to -72 VDC.

Figure 1: PWR-4.4KW-DC-V3



Note The power mode switch must be in the same position for all power trays installed in the chassis, either 60A or 100A mode.

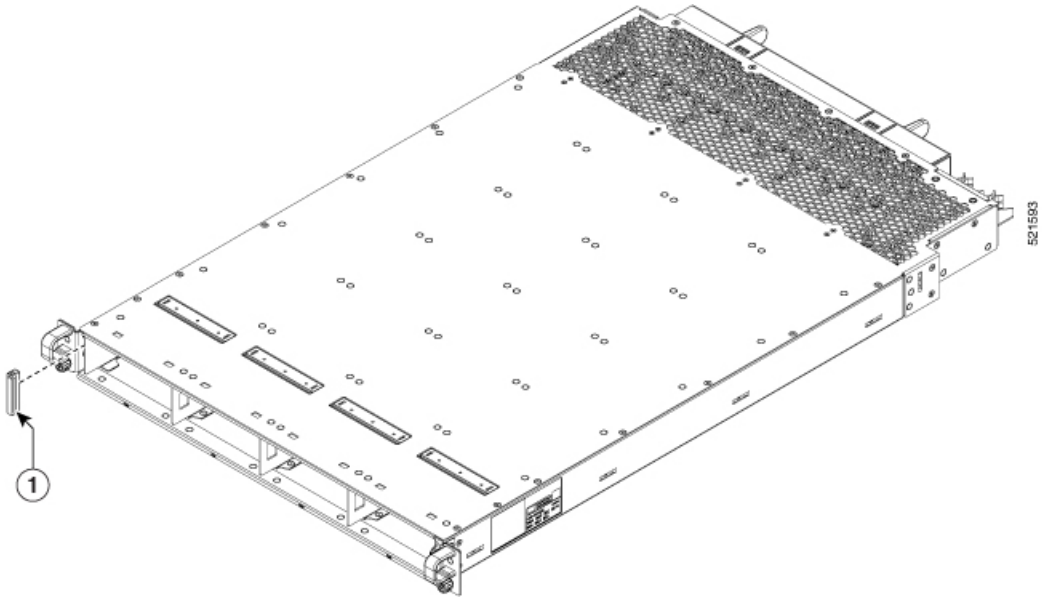
Figure 2: Power Mode Switch on the Power Tray



1	Power mode switch.

A plug cover is also provided to block the access to the power mode switch as shown in the below figure:

Figure 3: Power Mode Switch Cover



1	Power mode switch cover.

Connect DC Power Supply to Power Source

This section contains the procedures to connect the DC source power cables to a DC-powered switch.

For DC power cables, we recommend that you use 60A-rated, high-strand-count copper wire cables (#6 AWG or #4 AWG), or 100A-rated high-strand-count copper wire cables (#2 AWG) . The length of the cables depends on your switch location from the source power. DC power cables are not available from Cisco, but they are available from any commercial cable vendor.

You must terminate DC power cables using cable lugs at the power tray end. Ensure that the lugs are right-angle dual-hole and that they fit over to allow quarter inch screws at 0.625-inch (15.88-mm) centers. For #4 AWG cable, use Panduit part number LCD4-14AF-L or equivalent; for #6 AWG, use Panduit part number LCD6-14AF-L or equivalent; for #2 AWG cables, use Panduit part number LCD2-14AF-Q or equivalent.

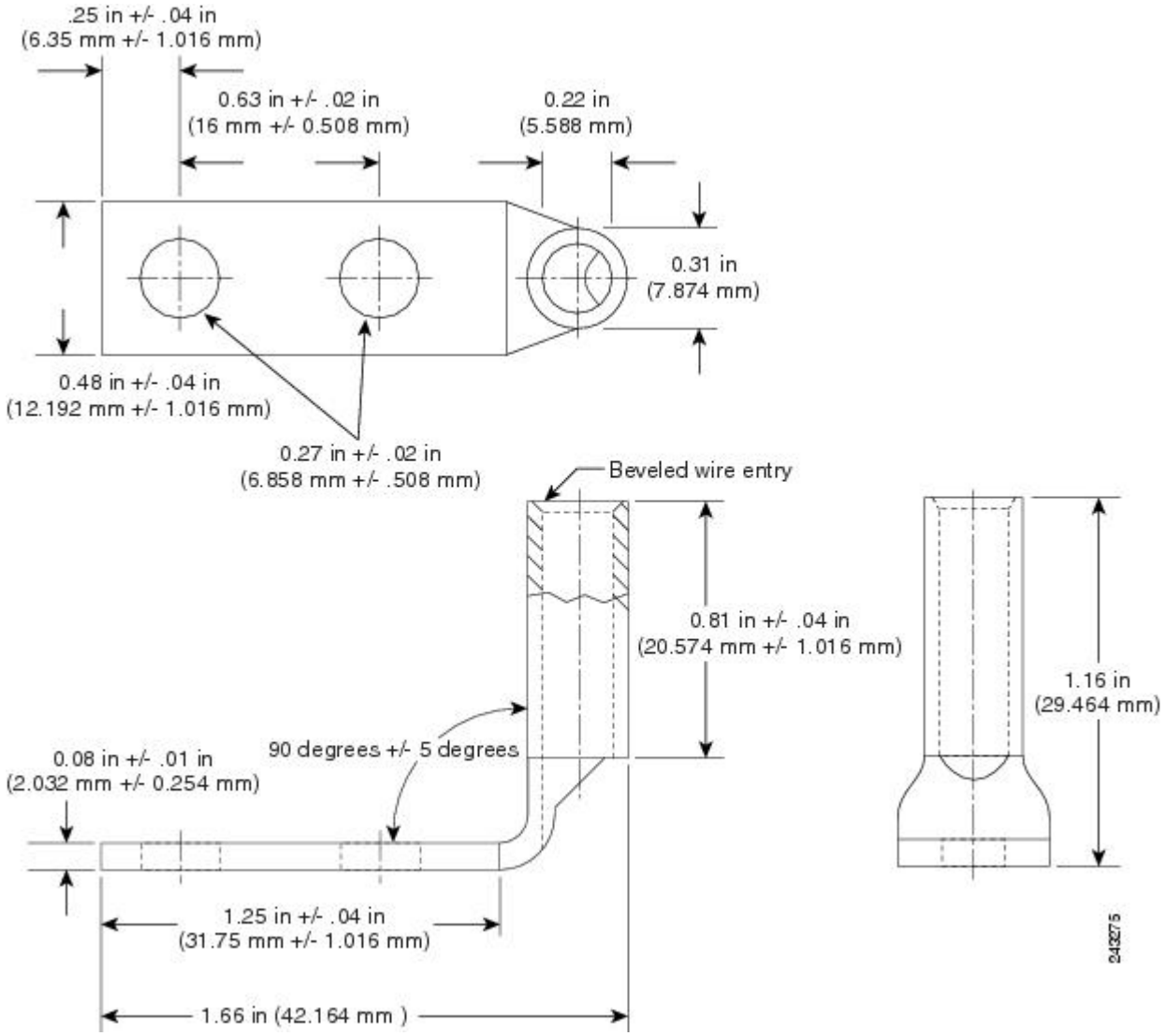
If you are not using power redundancy or are using n+1 power redundancy, you can connect all the power supplies in the chassis to the same power grid on the rear end of each power tray. If you are using n+n power redundancy, connect one redundant grid to one of the power supply inputs and the other redundant grid to the other power supply input on the back of the power tray as shown for each power supply.

The color coding of source DC power cable leads depends on the color coding of the site DC power source. Ensure that power source cables are connected to the power module with the proper positive (+) and negative (–) polarity:

- After powering on the switch, you should see an LED (for each input) light up green on each power shelf. If LEDs light up red that indicates that the polarity is incorrect.

This figure shows the lug type required for DC input cable connections.

Figure 4: Typical DC Power Cable Lug



Caution DC power modules contain circuitry to create a fault condition on the power module if the power module detects a reverse polarity condition. No damage should occur from reverse polarity, but ensure to correct a reverse-polarity condition immediately.

Note The length of the cables depends on the location of your switch in relation to the source of DC power. These cables and the cable lugs that are used to attach the cables to the switch chassis are not available from Cisco Systems. They are available from any commercial cable vendor.

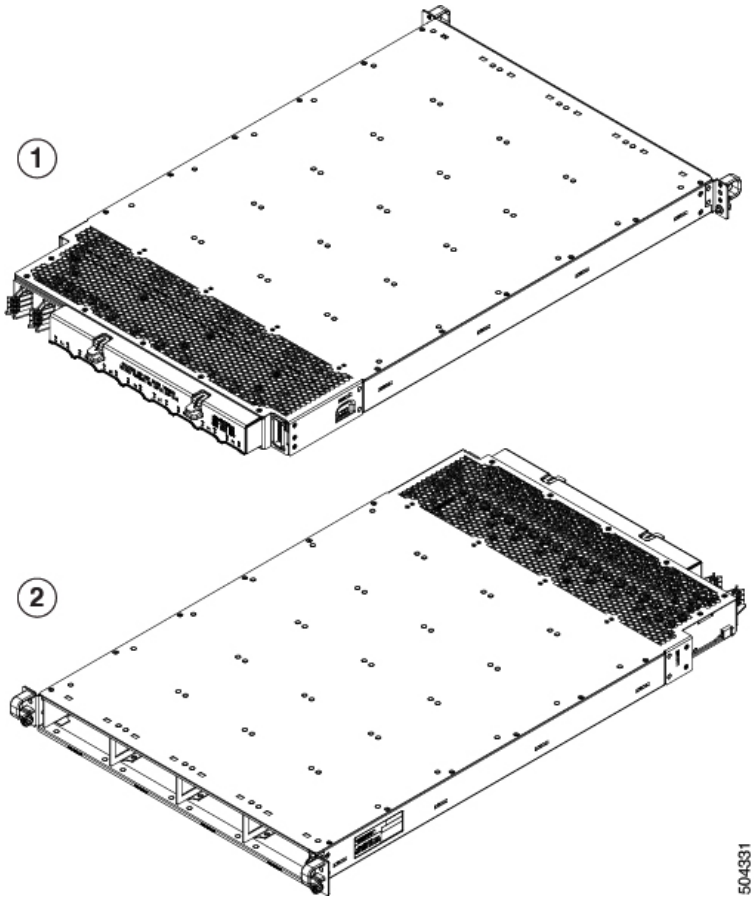
Caution To ensure that power remains off while you are performing this procedure, lock-out/tag-out the DC circuit breaker switch in the off (0) position until you are ready to turn it on.

Follow these steps to connect the DC source power cables to a DC power tray:

Procedure

Step 1 Verify that the power tray switch is set to the STANDBY (0) position.

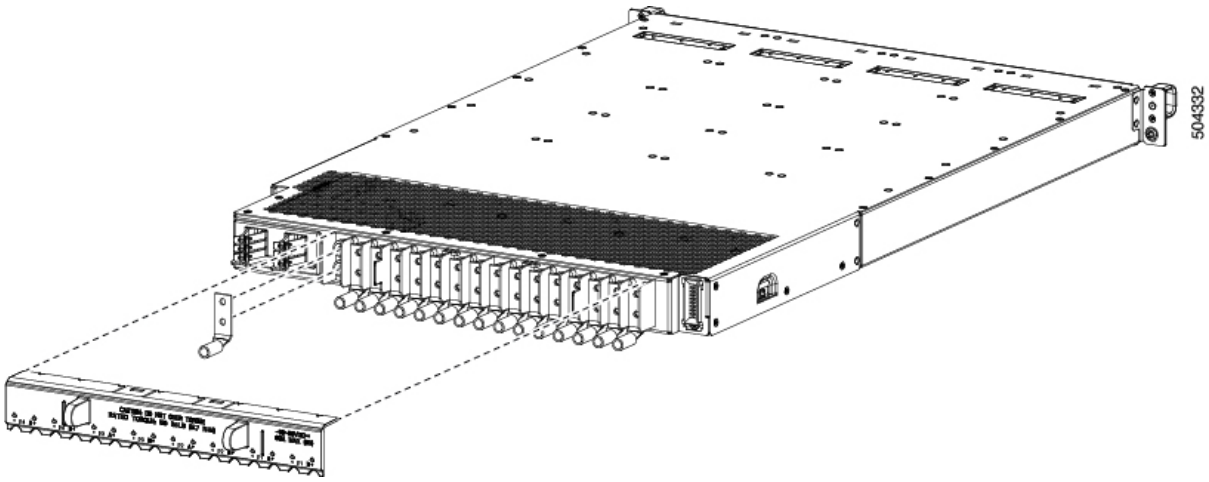
Figure 5: DC Power Tray



1	Rear	2	Front

Step 2 Remove the clear plastic safety covers that fit over the DC power connection terminal studs.

Figure 6: DC Power Connection



Step 3 Connect the DC power cables in the following order.

a) Positive cables first.

b) Negative cables last.

Step 4 Repeat Step 3 for the other power modules installed in the tray.

Caution To prevent injury and damage to the equipment, always attach the ground and source DC power cable lugs to power tray terminals in the following order: (1) positive (+) to positive (+), (2) negative (–) to negative (–).

Caution Do not overtighten the nuts that secure the DC power cables to the power tray terminals. Using the 7/16 hex socket and torque wrench the nuts should be tightened to a torque of 45–50 in-lb.

Step 5 Replace the clear plastic safety covers over the connection terminal studs.

Step 6 Turn on the switch of the power shelf to turn on the system.

Connect HVAC/HVDC Power Supply to Power Source

The HVAC/HVDC power supply has 2 redundant input power lines. It can provide a power output of 6.3 kW from each input power line with 2 inputs operating, or provide 4.8 kW (30A) or 3.15 kW (20A) output from either input with one input operating. The HVAC/HVDC power supply provides *n*+*n* or *n*+*x* line redundancy mode in a single power supply for the switch.

The HVAC/HVDC power supply accepts a maximum of 305VAC or 400VDC input power.

If you are not using power redundancy or are using *n*+1 power redundancy, you can connect all the power supplies in the chassis to the same power grid on the rear end of each power tray. If you are using *n*+*n* power redundancy, connect one redundant grid to one of the power supply inputs and the other redundant grid to the other power supply input on the back of the power tray as shown for each power supply. To enable grid redundancy, you must connect the corresponding inlet of power supplies to the correct power grids. For example, first inlet of all PS slots correspond to Grid-A and second inlet of all PS slots correspond to Grid-B.

Before you begin

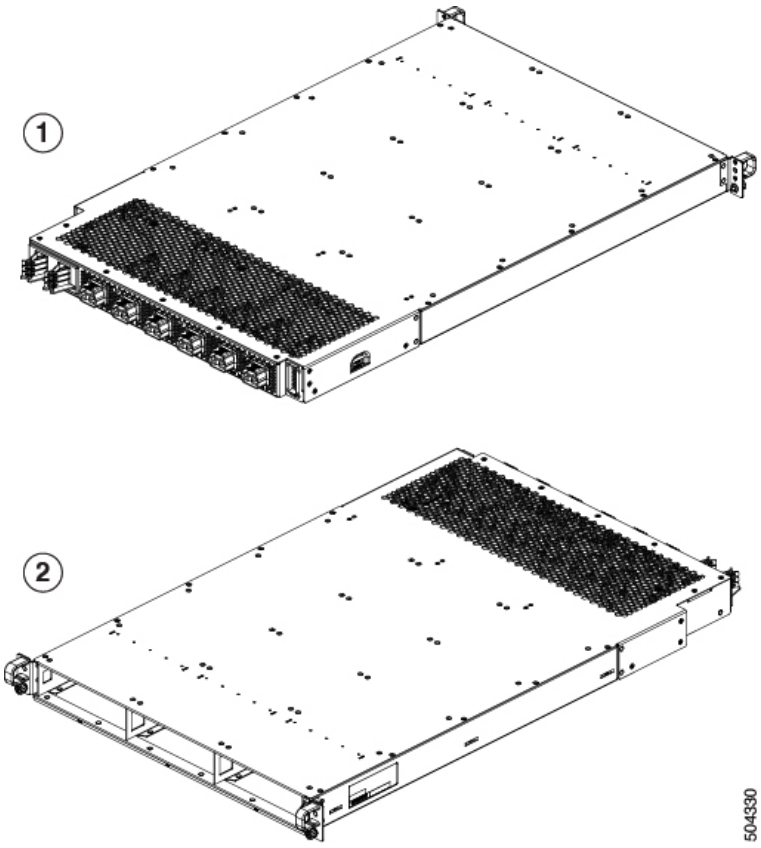
- Turn off the power source at its circuit breaker.
- Check that the power switch is set to the STANDBY (0) position on the power tray.
- NXK-HV-6.3KW30A-A: The HVAC or HVDC power sources are rated for 30A maximum input current.
- NXK-HV-6.3KW20A-A: The HVAC or HVDC power sources are rated for 20A maximum input current.

Procedure

Step 1 Choose your power supply (HVAC or HVDC) and use a Saf-D-Grid power cable to connect to the power supply tray.

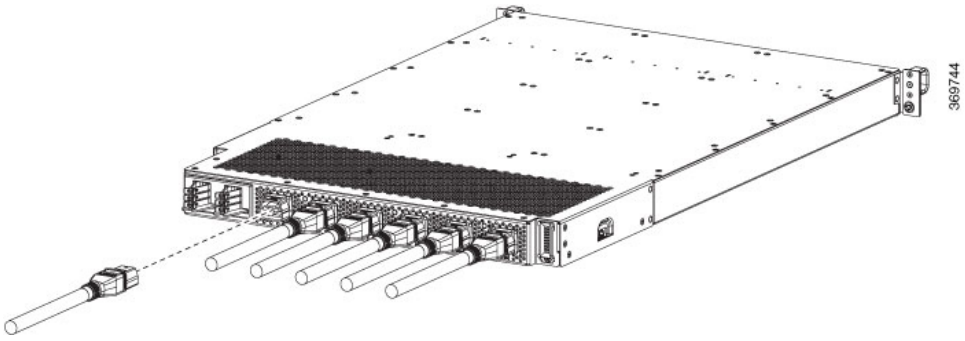
Step 2 For HVAC input, connect a Saf-D-Grid AC power cable to the Saf-D-Grid receptacle.

Figure 7: HV Power Tray



1	Rear	2	Front

Figure 8: HVAC Power Connection



Step 3 For HVDC input, connect a Saf-D-Grid DC cable to a Saf-D-Grid receptacle, otherwise:

a) Connect the ground terminal ring on the power cable to the ground terminal on the DC power source and secure it in place with a nut tightened to the appropriate torque setting for the terminal post.

b) Connect the negative terminal ring on the power cable to the negative (-) terminal on the DC power source and secure it in place with a nut tightened to the appropriate torque setting for the terminal post.

c) Connect the positive terminal ring on the power cable to the negative (+) terminal on the DC power source and secure it in place with a nut tightened to the appropriate torque setting for the terminal post.

Step 4 Verify that the Saf-D-Grid plug is plugged in completely to secure the built-in retaining latch.

Step 5 Turn on the circuit breaker for the HVAC or HVDC power source circuit.

Note If you use both inputs, the IN LED of the power supply is green. If you use only one input, the IN LED is blinking green.

Step 6 Turn on the switch of the power shelf to turn on the system.

What to do next

Use the **power redundancy-mode** *mode* command to specify one of the following power modes:

- For combined mode, include the **combined** keyword.
- For *n*+1 redundancy mode, include the **ps-redundant** keyword.
- For *n*+*n* redundancy mode, include the **insrc-redundant** keyword.

Example:

```
switch(config)# power redundancy-mode insrc-redundant
switch(config)#
```

Power Supply Power Cord Specifications

Note Always use the Saf-D-Grid connector toward the switch.

Table 1: Standard AC and HDVC Power Cords

Locale	Part Number	Cisco Part Number (CPN)	Power Cord Set Rating	Connector Part Number	Power Cord Illustration
North America	CAB-AC-20A-SG-C20	37-1653-01	20A, 250VAC	Saf-D-Grid 3-5958P4 to IEC 60320 C20	Refer the figure in Power Cord Illustrations, on page 10
IEC/EU, US, CANADA, MEXICO, BRAZIL, NETHERLANDS, IRELAND, FRANCE, UK, GERMANY, SWITZERLAND, NORWAY, SPAIN, ITALY, SINGAPORE, CHINA, SOUTH AFRICA	CAB-AC-20A-NA	37-2126-01	20A, 250VAC	Saf-D-Grid 3-5958P2 to IEC 60320 C20	Refer the figure in Power Cord Illustrations, on page 10
IEC/EU, AUSTRALIA/NEW ZEALAND, SWITZERLAND, ITALY, SOUTH AFRICA, ISRAEL, BRAZIL, ARGENTINA, INDIA	CAB-AC-32A-ANZ, CAB-AC-32A-CHE, CAB-AC-32A-ITA, CAB-AC-32A-BRZ, CAB-AC-32A-ZAF, CAB-AC-32A-ISR, CAB-AC-32A-IND, CAB-AC-32A-ARG	37-101007-01	32A, 250VAC	Saf-D-Grid 3-5958P4 to Hubbell C332P6S Plug	Refer the figure in Power Cord Illustrations, on page 10
NORTH AMERICA	CAB-AC-30A-US1, CAB-AC-30A-US2	37-101008-01, 37-101009-01	30A, 250VAC	Saf-D-Grid 3-5958P4 to VOLEX 174606	Refer the figure in Power Cord Illustrations, on page 10
NORTH AMERICA	CAB-DC-30A-US1, CAB-DC-30A-US2	37-101014-01	30A, 400VDC	Saf-D-Grid 3-5958P4 to Saf-D-Grid 3-5958P4	Refer the figure in Power Cord Illustrations, on page 10
NORTH AMERICA	CAB-AC-30A-US3	37-101013-01	30A, 277VAC	Saf-D-Grid 3-5958P4 to HBL2631	Refer the figure in Power Cord Illustrations, on page 10

Locale	Part Number	Cisco Part Number (CPN)	Power Cord Set Rating	Connector Part Number	Power Cord Illustration
NORTH AMERICA	CAB-AC-30A-US4	37-101018-01	30A, 300VAC	Saf-D-Grid 3-5958P4 to Saf-D-Grid 3-6074P30	Refer the figure in Power Cord Illustrations, on page 10
IEC/EU	CAB-AC-32A-EU	37-101019-01	32A, 300VAC	Saf-D-Grid 3-5958P4 to Saf-D-Grid 3-6074P30	Refer the figure in Power Cord Illustrations, on page 10
IEC/EU	CAB-DC-32A-EU1, CAB-DC-32A-EU2	37-101015-01, 37-101017-01	32A, 400VDC	Saf-D-Grid 3-5958P4 to Saf-D-Grid 3-5958P4	Refer the figure in Power Cord Illustrations, on page 10
CHINA	CAB-AC-32A-CHN	37-101010-01	32A, 250VAC	-	Refer the figure in Power Cord Illustrations, on page 10
KOREA	CAB-AC-32A-KOR	37-101012-01	32A, 250VAC	-	Refer the figure in Power Cord Illustrations, on page 10

Power Cord Illustrations

Figure 9: CAB-AC-20A-SG-C20 Power Cord and Plugs for Standard AC Power Supply

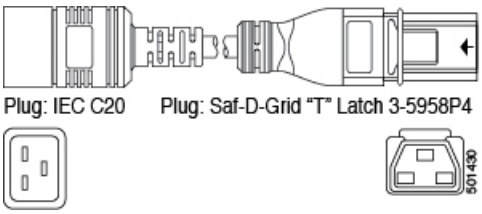


Figure 10: CAB-AC-20A-NA Power Cord and Plugs for Standard AC Power Supply

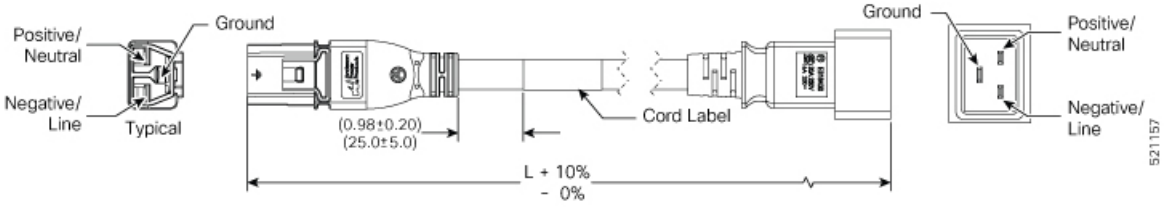


Figure 11: CAB-AC-32A-ANZ, CAB-AC-32A-CHE, CAB-AC-32A-ITA, CAB-AC-32A-BRZ, CAB-AC-32A-ZAF, CAB-AC-32A-ISR, CAB-AC-32A-IND, CAB-AC-32A-ARG Power Cord and Plugs for Standard AC Power Supply

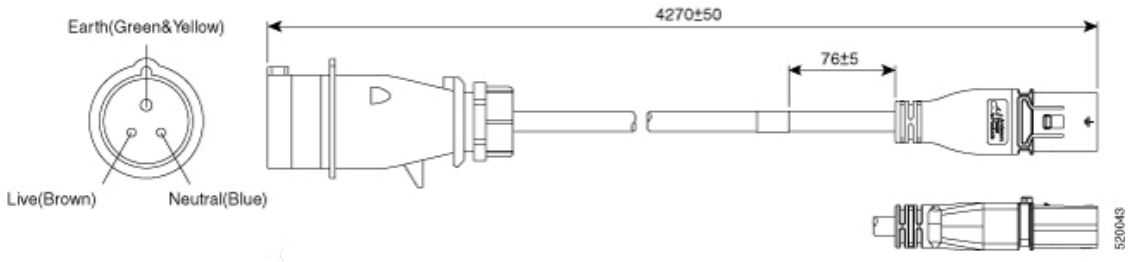


Figure 12: CAB-AC-30A-US1, CAB-AC-30A-US2 Power Cord and Plugs for Standard AC Power Supply

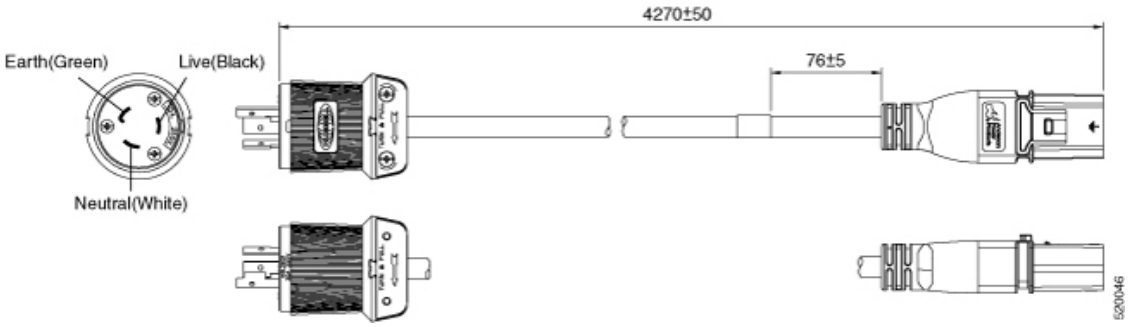


Figure 13: CAB-DC-30A-US1, CAB-DC-30A-US2 Power Cord and Plugs for HVDC Power Supply

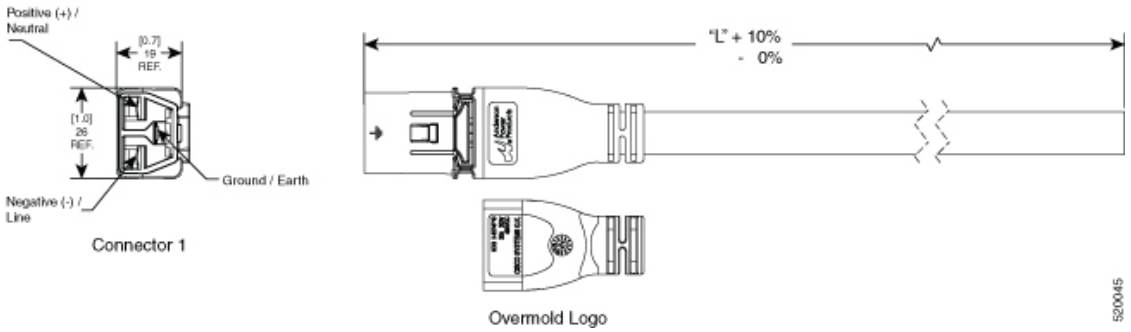


Figure 14: CAB-AC-30A-US3 Power Cord and Plugs for Standard AC Power Supply

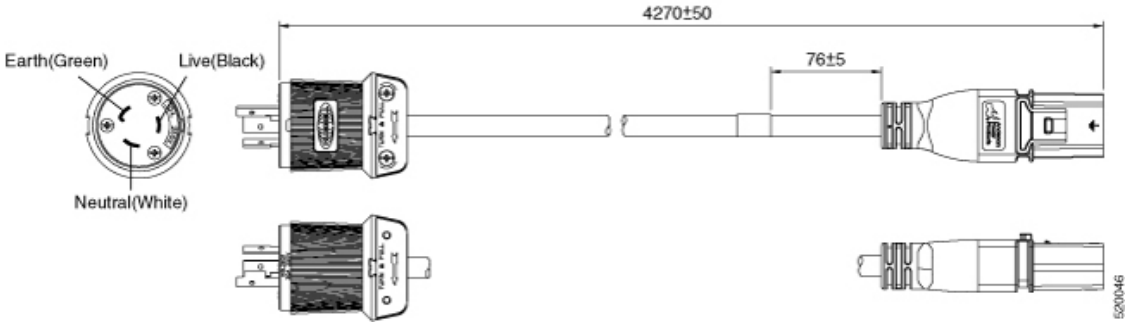


Figure 15: CAB-AC-30A-US4 Power Cord and Plugs for Standard AC Power Supply

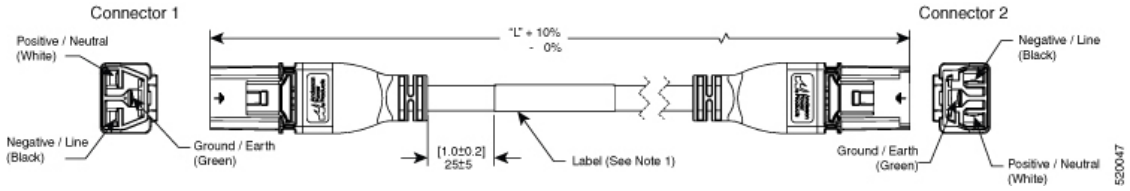


Figure 16: CAB-AC-32A-EU Power Cord and Plugs for Standard AC Power Supply

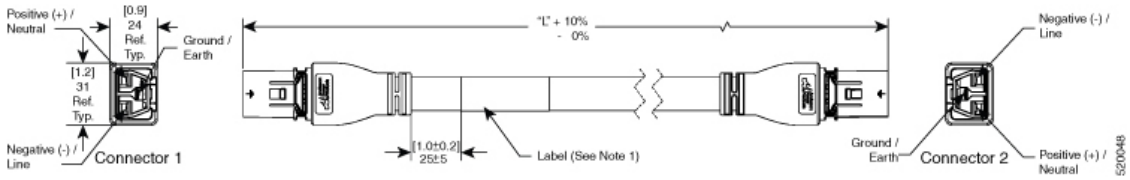


Figure 17: CAB-DC-32A-EU1, CAB-DC-32A-EU2 Power Cord and Plugs for HVDC Power Supply

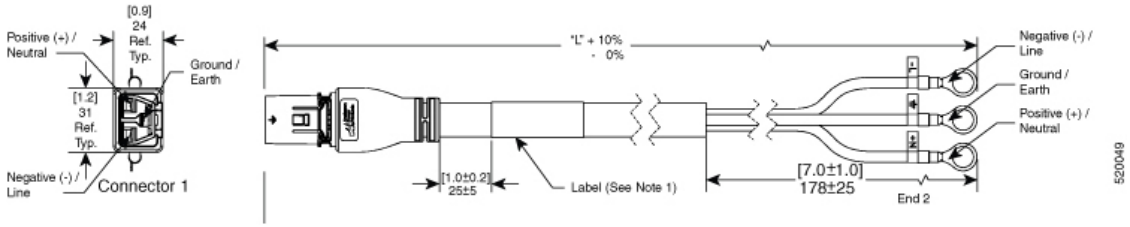


Figure 18: CAB-AC-32A-CHN Power Cord and Plugs for Standard AC Power Supply

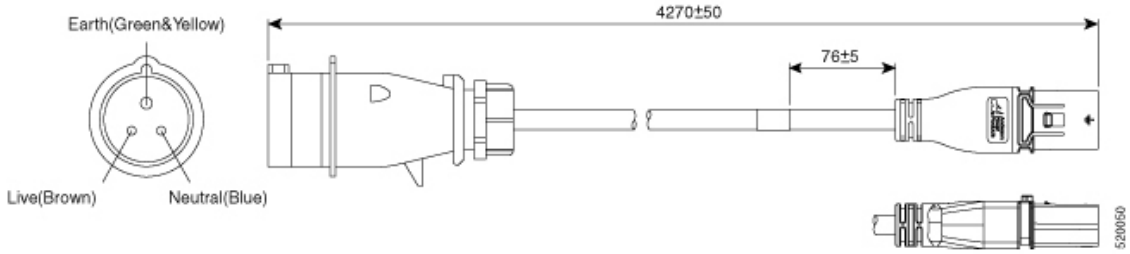


Figure 19: CAB-AC-32A-KOR Power Cord and Plugs for Standard AC Power Supply