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Nokia UltraSite EDGE BTS, Rel. CX5, Product Documentation, v.1

Replacing UltraSite EDGE BTS Cabinet Cables

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Contents

1 Summary of changes in Replacing UltraSite EDGE BTS Cabinet Cables

The following changes have taken place in the *Replacing UltraSite EDGE BTS Cabinet Cables* document:

- Warnings and cautions relocated from the beginning of the document in applicable procedures
- The following sections including Mini Outdoor information added:
  - Connecting single-phase AC power to BTS Mini Outdoor
  - Connecting -48 VDC power cables to Mini Outdoor
  - Connecting +24 VDC power cables to Mini Outdoor
  - Connecting grounding cables to Mini Outdoor

2 Replacing AC power cables

2.1 Removing AC power cables

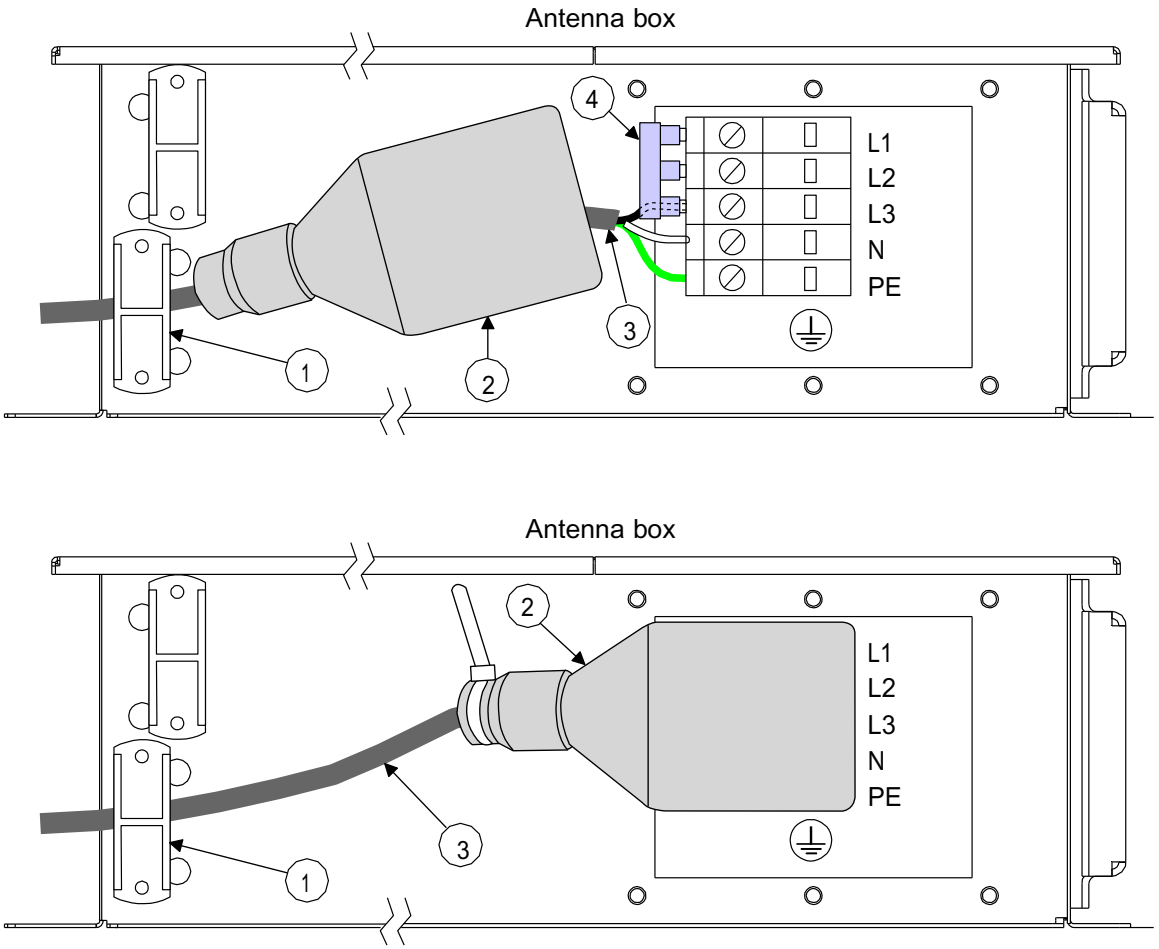
Before you start

Note

Depending on the position of the antenna box, you need to remove the dummy cable entry panel adjacent to the power connector to access the connector screws. As an alternative, you can remove the screws securing the antenna box to the cabinet and lift the antenna box to access the connector screws.

Summary

The following information describes how to remove single-phase AC power cables for BTS cabinets located within the USA and Canada (two wires with ground) and Europe (one wire with neutral and ground). It also describes how to remove three-phase AC power cables for BTS cabinets located within Europe.



NOTE: Power input wiring must adhere to local codes.
L1, L2, L3 (Shorted), N = Neutral, PE = Ground

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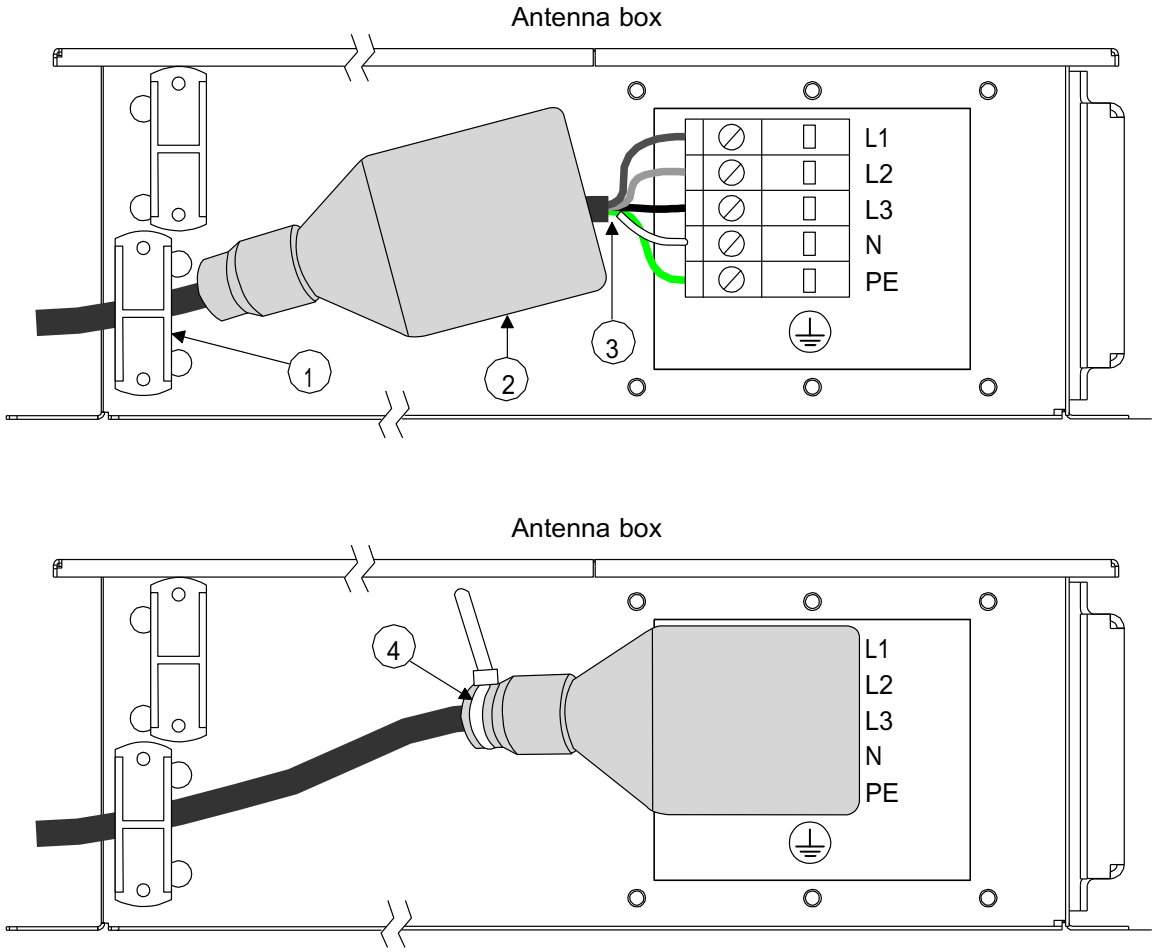
Figure 1. Single-phase AC power to the BTS (USA, Canada and Europe)

1	Strain relief
2	Shorting bar
3	AC Power input cable



NOTE: Power input wiring must adhere to local codes.
L1 = Phase 1, L2 = Phase 2, L3 = Phase 3,
N = Neutral, PE = Ground

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Figure 2. Three-phase AC power to the BTS (Europe)

1	Strain relief
2	AC Power input cable

Steps

1. **Power down the BTS.**

2. **Turn the mains power breaker off.**

3. *If* you are removing the single-phase AC power cable (USA and Canada),

   Then

   Perform the following steps:

   a. Loosen the screws on the strain relief.
   b. Turn the screw of the N connector to the left to open the connector. Remove the live wire.
   c. Turn the screw of the L3 connector to the left to open the connector. Remove the live wire.
   d. Turn the screws of the L1 and L2 connectors to the left to open the connectors. Remove the shorting bar from L1, L2, and L3.
   e. Turn the screw of the PE connector to the left to open the connector. Remove the ground wire.
   f. Turn the screws of the L1, L2, L3, N and PE Phoenix connector terminals to the right to close them.
   g. Remove the power cable from the strain relief.

4. *If* you are removing the single-phase AC power cable (Europe),

   Then

   Perform the following steps:

   a. Loosen the screws on the strain relief.
   b. Turn the screw of the N connector to the left to open the connector. Remove the neutral wire.
   c. Turn the screw of the L3 connector to the left to open the connector. Remove the live wire.
   d. Turn the screws of the L1 and L2 connectors to the left to open them. Remove the shorting bar from L1, L2, and L3.
   e. Turn the screw of the PE connector to the left to open the connector. Remove the ground wire.
   f. Turn the screws of the L1, L2, L3, N, and PE Phoenix connector terminals to the right to close them.
   g. Remove the power cable from the strain relief.

5. *If* you are removing the three-phase AC power cable (Europe),

   Then

   Perform the following steps:

   a. Loosen the screws on the strain relief.
   b. Turn the screws of the L1, L2, and L3 connectors to the left to open them. Remove the three live wires from these connectors.

c. Turn the screw of the N connector to the left to open the connector. Remove the neutral wire.

d. Turn the screw of the PE connector to the left to open the connector. Remove the ground wire.

e. Turn the screws of the L1, L2, L3, N, and PE Phoenix connector terminals to the right to close them.

f. Remove the power cable from the strain relief.

2.2 Overview of connecting AC power cables

Summary

The AC terminal block is rated to accept cable from 10 to 16 mm^2. The recommended cross sectional area of cable connecting to the AC terminal block is 13.3 mm^2 (flexible stranded #6 AWG).

Note

The AC Filter unit and the insertion bridge are optional equipment and are installed on the opposite side of the antenna box. However, the AC Filter unit must be installed first for AC power installations. The default -48 VDC Filter unit can be removed from the antenna box, if desired.

Note

Depending on the position of the antenna box, you may need to remove the dummy cable entry panel adjacent to the power connector to access the connector screws. As an alternative, you can remove the screws securing the antenna box to the cabinet core and lift the antenna box to access the connector screws.

Steps

1. *If* connecting single-phase AC power to the BTS in the USA and Canada,

   Then

   See Connecting single-phase AC power in the USA and Canada.

2. *If* connecting single-phase AC power to the BTS in Europe,

Then

See Connecting single-phase AC power in Europe.

3. *If* connecting three-phase AC power to the BTS in Europe,

   Then

   See Connecting three-phase AC power in Europe.

4. *If* connecting AC power to Mini outdoor BTS

   Then

   See Connecting single-phase AC power to BTS Mini Outdoor.

2.3 Connecting single-phase AC power in the USA and Canada

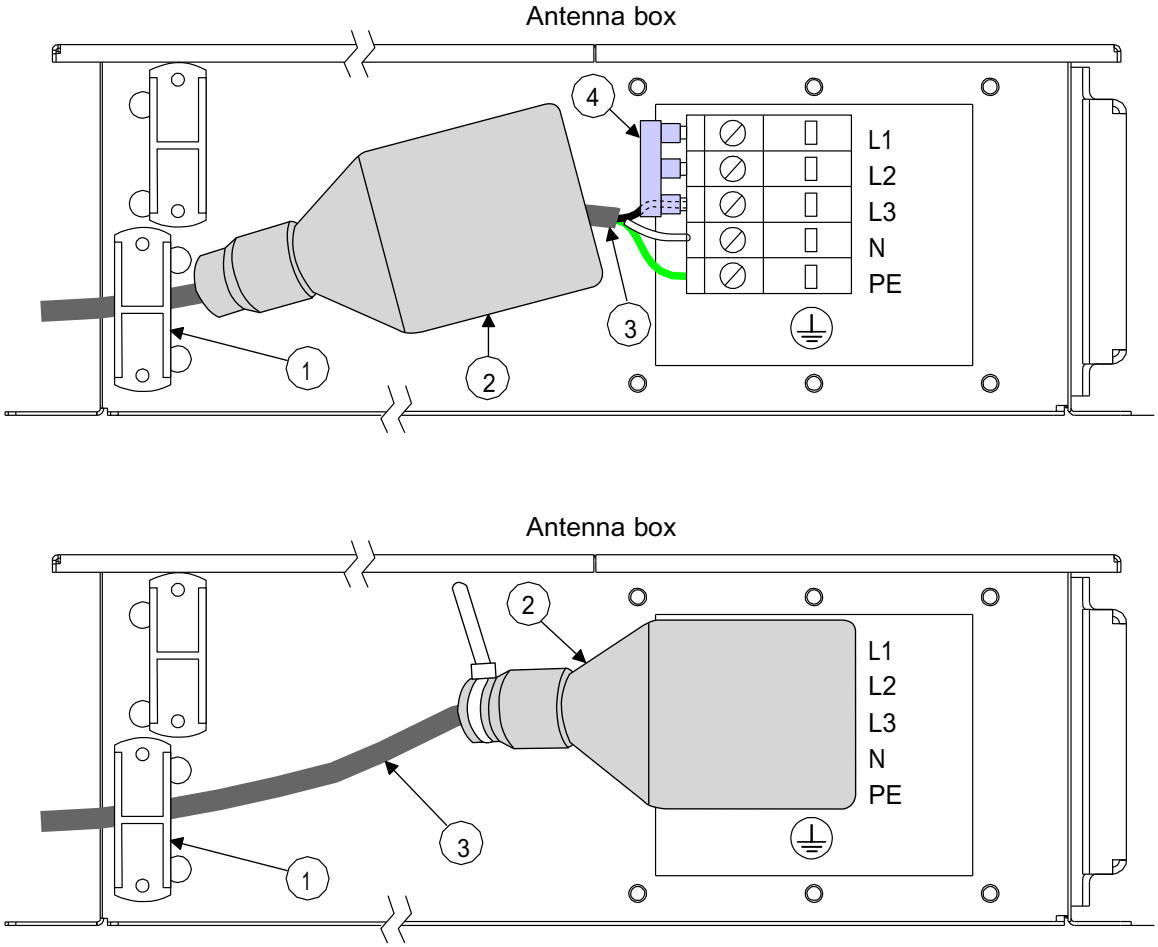
Before you start

Note

Place rubber covers on any DC cables and terminals that are not being used.

You can disconnect power from the DC filter by disconnecting the two colour-coded J5 cables from the busbar to the DC filter output terminals inside the antenna box.

Summary



NOTE: Power input wiring must adhere to local codes.
L1, L2, L3 (Shorted), N = Neutral, PE = Ground

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Figure 3. Connecting single-phase AC power to the BTS

1	Strain relief
2	Rubber boot
3	AC Power input cable
4	Insertion bridge
5	Tie-wrap

Steps

1. **Verify that the cabinet is properly grounded and that the mains power breaker is off.**
2. **Cut the outer sheath of the AC power cable to expose the three internal wires.**
3. **Route the power cable through the strain relief on the antenna box.**
4. **Route the cable through the opening of the rubber boot.**
5. **Strip about 13 mm (0.5 in.) of insulation from each of the three exposed wires.**
6. **Turn the screws to the left to open the L1, L2, L3, N, and PE Phoenix/ Schaffner connector terminals.**
7. **Insert the ground wire into the PE connector and then turn the screw to the right to close the connector.**
8. **Insert the insertion bridge into L1, L2, and L3 and then turn the screws to the right to close the L1 and L2 connectors.**
9. **Insert one live wire into the L3 connector and then turn the screw to the right to close the connector.**
10. **Insert the second live wire into the N connector and then turn the screw to the right to close the connector.**
11. **Tighten the screws on the strain relief to secure the power cable.**
12. **Pull the black rubber boot over the connector terminals.**
13. **Tie-wrap the base of the rubber boot to the cable.**

2.4 Connecting single-phase AC power in Europe

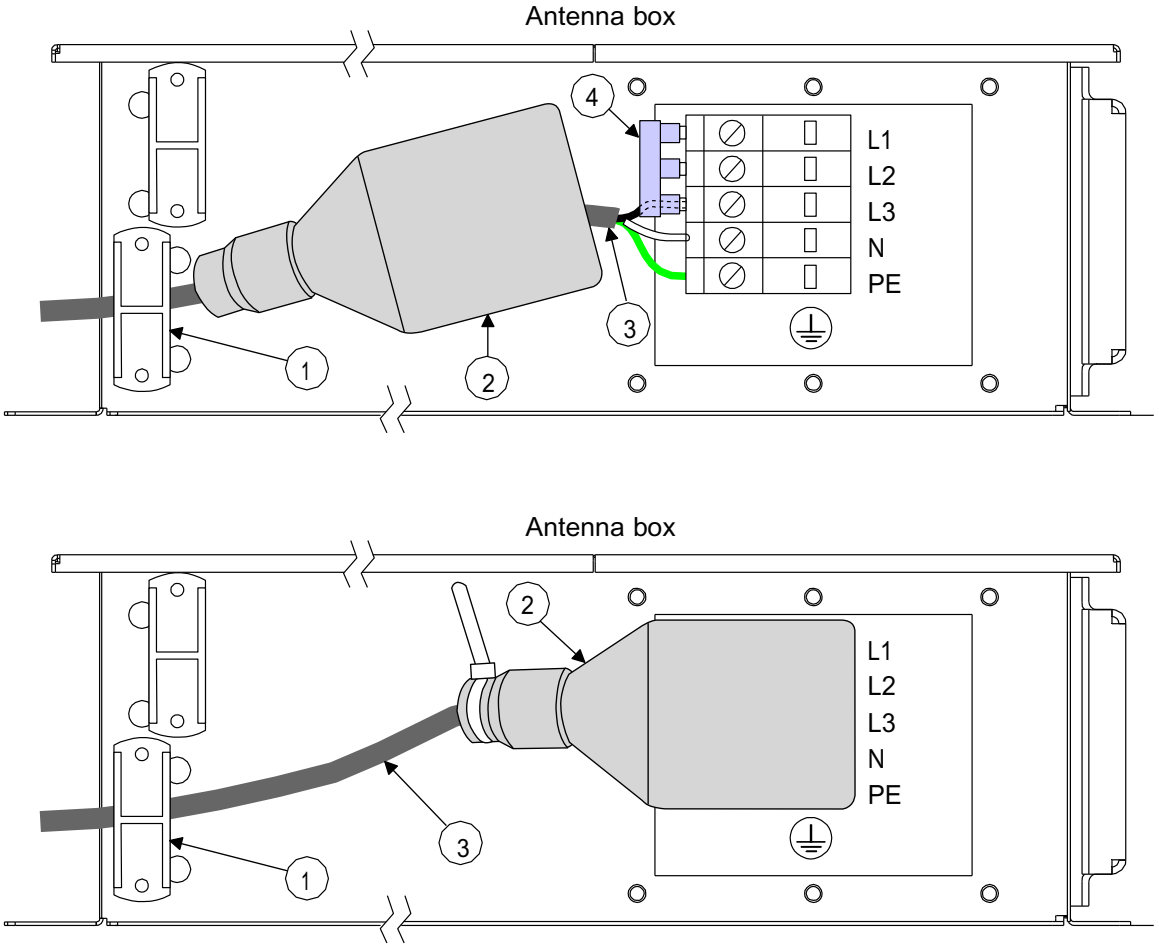
Before you start

Note

Place rubber covers on any DC cables and terminals that are not being used.

You can disconnect power from the DC filter by disconnecting the two colour-coded J5 cables from the busbar to the DC filter output terminals inside the antenna box.

Summary



NOTE: Power input wiring must adhere to local codes.
L1, L2, L3 (Shorted), N = Neutral, PE = Ground

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Figure 4. Connecting single-phase AC power to the BTS

1	Strain relief
2	Rubber boot
3	AC Power input cable
4	Insertion bridge
5	Tie-wrap

Steps

1. **Ensure that the cabinet is properly grounded and that the mains power breaker is OFF.**
2. **Cut the outer sheath of the AC power cable to expose the three internal wires.**
3. **Route the power cable through the strain relief on the antenna box.**
4. **Route the cable through the opening of the rubber boot.**
5. **Strip about 13 mm (0.5 in.) of insulation from each of the three exposed wires.**
6. **To open the L1, L2, L3, N, and PE Phoenix/Schaffner connector terminals, turn the screws to the left.**
7. **Insert the ground wire into the PE connector and then turn the screw to the right to close the connector.**
8. **Insert the shorting bar into L1, L2, and L3, and then turn the screws to the right to close the L1 and L2 connectors.**
9. **Insert the live wire into the L3 connector and then turn the screw to the right to close the connector.**
10. **Insert the neutral wire into the N connector and then turn the screw to the right to close the connector.**
11. **To secure the power cable, tighten the screws on the strain relief.**
12. **Pull the black rubber boot over the connector terminals.**
13. **Tie-wrap the base of the rubber boot to the cable.**

2.5 Connecting three-phase AC power in Europe

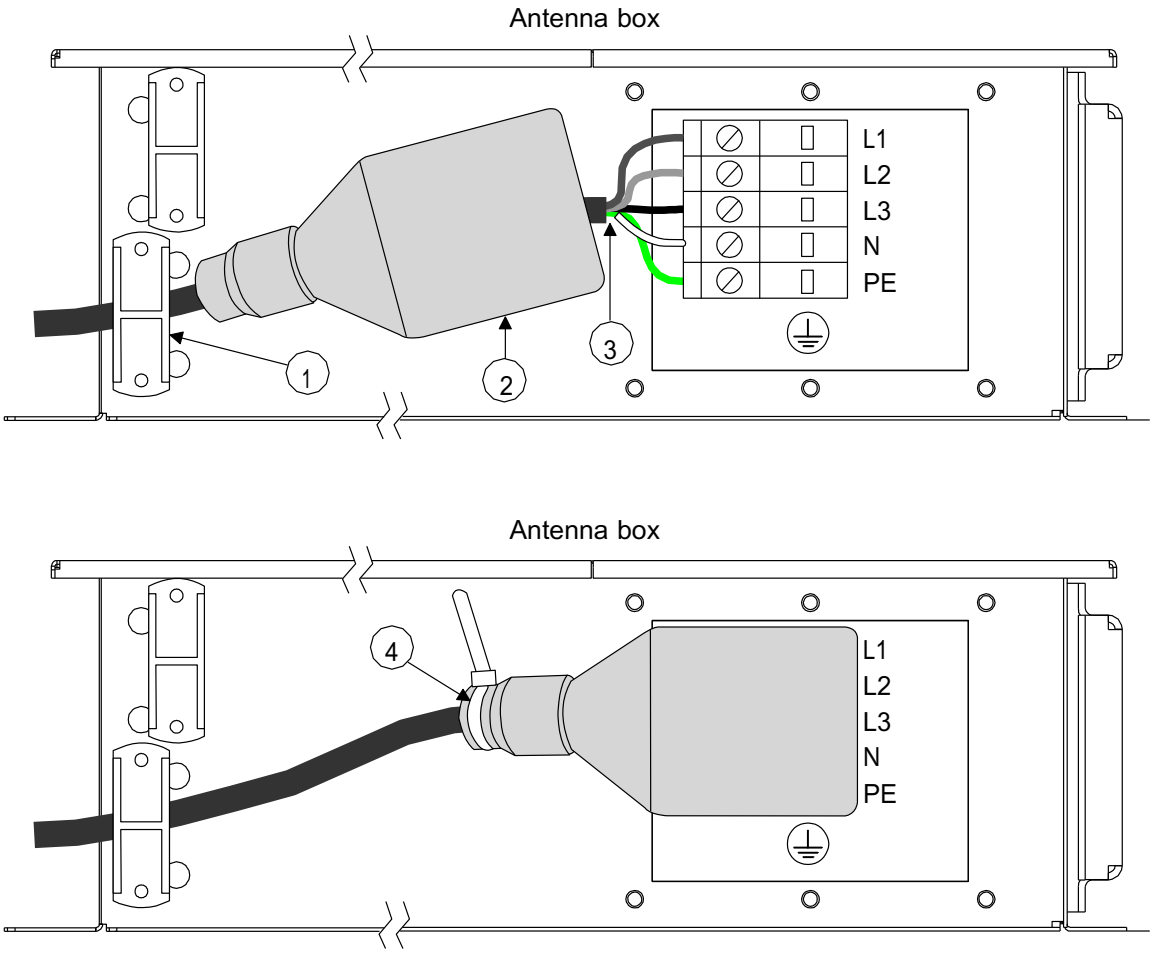
Before you start

Note

Place rubber covers on any DC cables and terminals that are not being used.

You can disconnect power from the DC filter by disconnecting the two colour-coded J5 cables from the busbar to the DC filter output terminals inside the antenna box.

Summary



NOTE: Power input wiring must adhere to local codes.
L1 = Phase 1, L2 = Phase 2, L3 = Phase 3,
N = Neutral, PE = Ground

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1	Strain relief
2	Rubber boot
3	AC Power input cable
4	Tie-wrap

Figure 5. Connecting three-phase AC power to the BTS

Steps

1. **Ensure that the cabinet is properly grounded and that the mains power breaker is OFF.**
2. **Cut the outer sheath of the AC power cable to expose the five internal wires.**
3. **Route the power cable through the strain relief on the antenna box.**
4. **Route the cable through the opening of the rubber boot.**
5. **Strip about 13 mm (0.5 in.) of insulation from each of the five exposed wires.**
6. **To open the L1, L2, L3, N, and PE Phoenix/Schaffner connector terminals, turn the screws to the left.**
7. **Insert the ground wire into the PE connector and then turn the screw to the right to close the connector.**
8. **Insert the neutral wire into the N connector and then turn the screw to the right to close the connector.**
9. **Insert the three live wires into the L1, L2, and L3 connectors and then turn each connector screw to the right to close the connectors.**
10. **To secure the power cable, tighten the screws on the strain relief.**
11. **Pull the black rubber boot over the connector terminals.**
12. **Tie-wrap the base of the rubber boot to the cable.**

2.6 Connecting single-phase AC power to BTS Mini Outdoor

Before you start

Warning

Damage to cabinet components or personnel can occur if the power cable is not secure. Ensure that the power cable is secure within the strain relief.

Warning

Risk of electric shock. The protective insulating shield is required to be installed over the terminal block in all AC installations in the cabinet. Ensure it is reinstalled after making electrical connections.

Warning

Risk of electric shock. When the mains power breaker is switched on, the terminals on the filter are live. Make sure that the cover is replaced before switching the mains power on.

Note

The maximum inner conductor size for the AC cables is 20 mm^2.

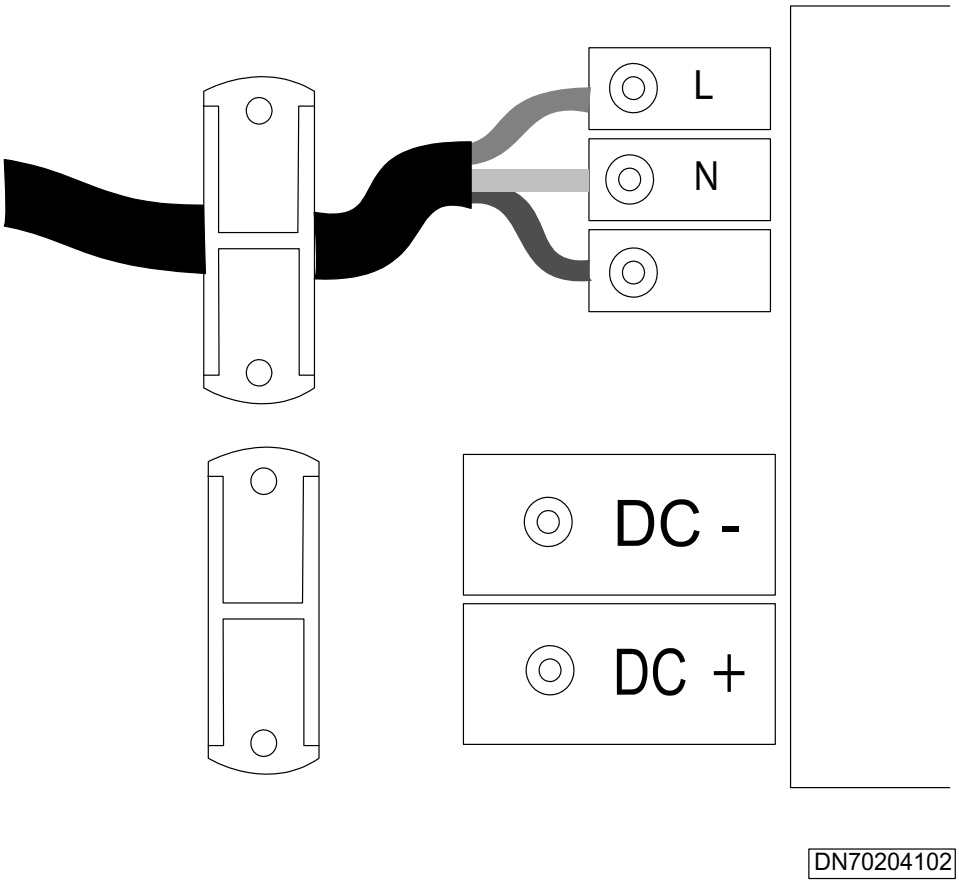


Figure 6. Connecting single-phase AC power to the BTS

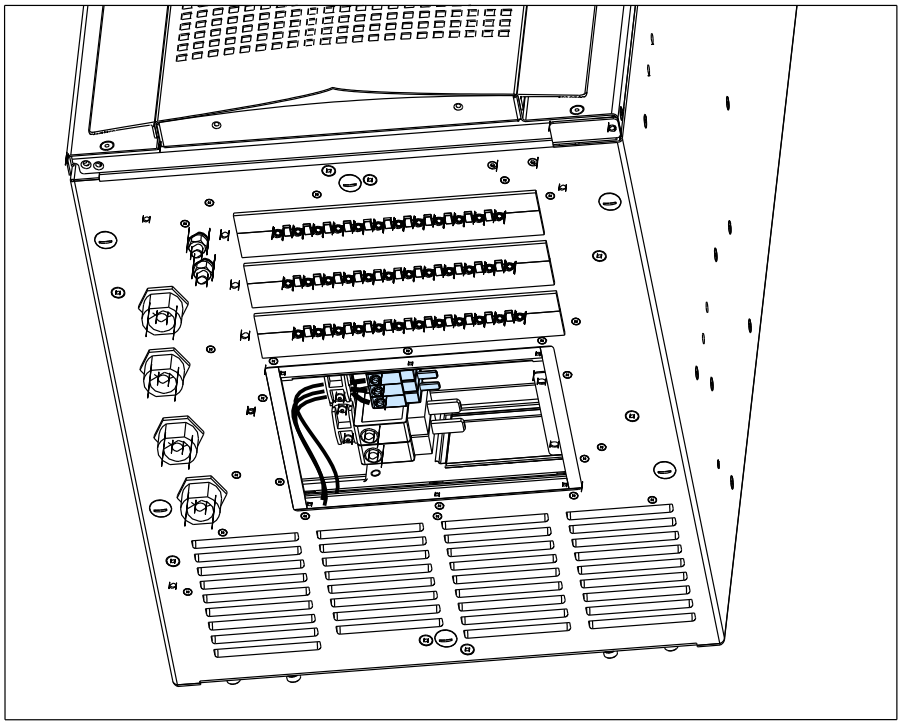


Figure 7. Routing AC power cables

Steps

1. **Ensure that the cabinet is properly grounded and that the mains power breaker is off.**

2. **Cut the outer sheath of the AC power cable to expose the three internal wires.**

3. **Unscrew the cover plate located on the supply terminals on the bottom panel of the cabinet .**

   The cover plate is attached with six T20 Torx screws.

4. **Route the power cable through the gland on the cover plate and then the cable clamp.**

5. **Strip about 13 mm (0.5 in.) of insulation from each of the three exposed wires.**

6. **To open the L, N, and PE connector terminals, turn the screws anti-clockwise using a posidrive screwdriver.**

7. **Insert the ground wire into the PE connector and then turn the screw clockwise until the connection is tight.**

8. **Insert the live wire into the L connector and then turn the screw clockwise until the connection is tight.**

9. **Insert the neutral wire into the N connector and then turn the screw clockwise until the connection is tight.**

10. **To secure the power cable, tighten the screws on the cable clamp.**

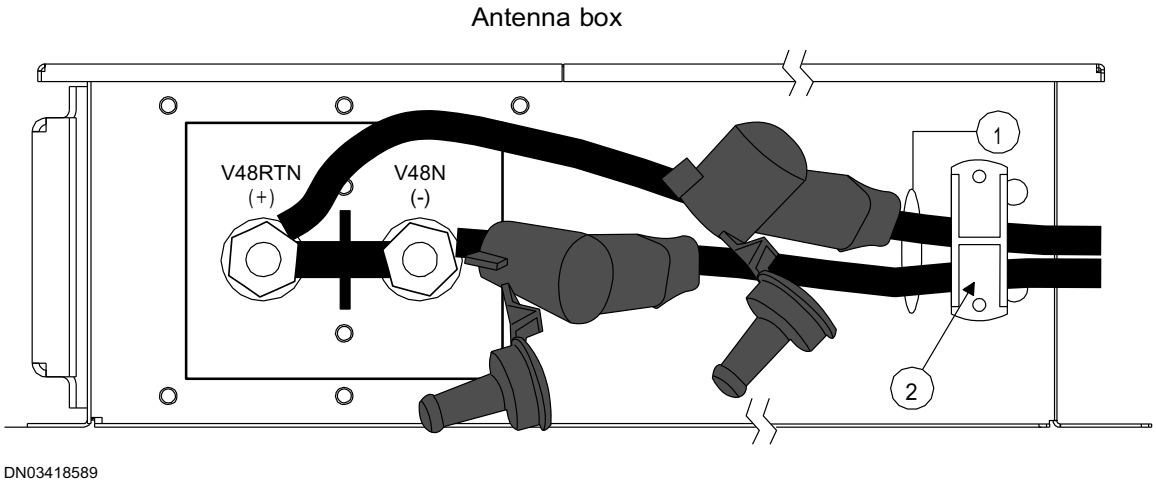
    For more information on torque settings, see *Torque settings*.

11. **Reinstall the cover plate over the connector terminals and tighten the screws.**

3 Replacing DC power cables

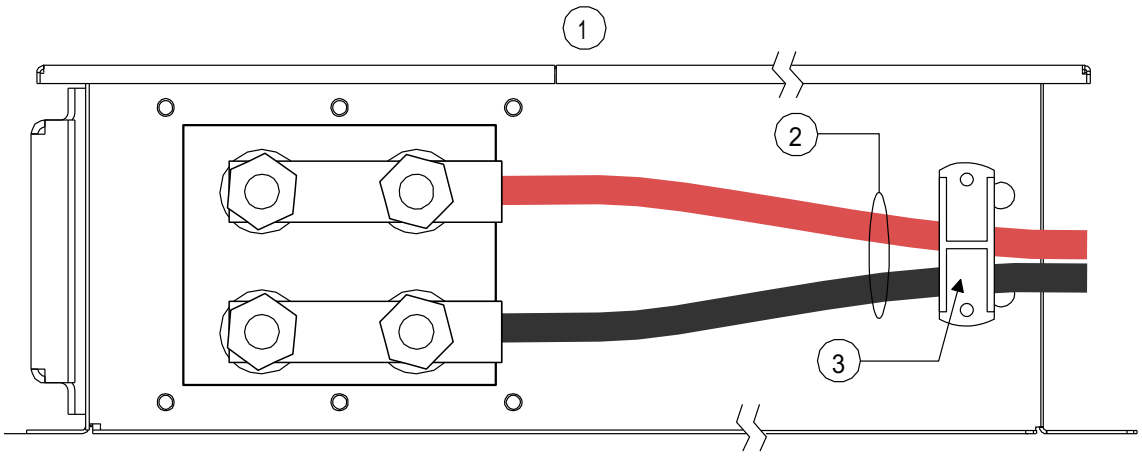
3.1 Removing DC power cables

Summary



1	DC Power input cable
2	Strain relief

Figure 8. -48 VDC power to the BTS



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1	Antenna box
2	DC Power input cables
3	Strain relief

Figure 9. +24 VDC power to the BTS

Steps

1. Power down the BTS.

2. Turn the main power breaker OFF.

3. Loosen the screws on the strain relief.

4. Remove the -48 VDC power cables.

a. Slide the filter covers off the terminal bolts.

b. Remove the bolt securing the blue (-) cable and disconnect the blue (-) cable.

c. Remove the bolt securing the black (+) cable and disconnect the black (+) cable.

d. Remove the wires from the strain relief on the cable box.

5. Remove the +24 VDC power cables.

a. Untie the lacing cord binding the positive and negative power cables together.
b. Loosen and remove the two M4x12 mounting screws and two M4 nuts.
c. Remove the terminal cover.
d. Untie the cable from the strain relief bracket.
e. Loosen the four installed nuts.
f. Remove the nuts from the -24VN(-) threaded studs of the DCFB and remove the black -24VN(-) cable lug from the studs.
g. Remove the nuts from the +24VP(+) threaded studs of the DCFB and remove the red +24VP(+) cable lug from the studs.
h. Remove the cables from the strain relief on the antenna box.

3.2 Connecting -48 VDC power cables

Before you start

Note

When routing power cables, follow all applicable national, state, and local regulations.

If the power cables must be routed through the cable entry kit, then route the cables before starting this procedure.

Summary

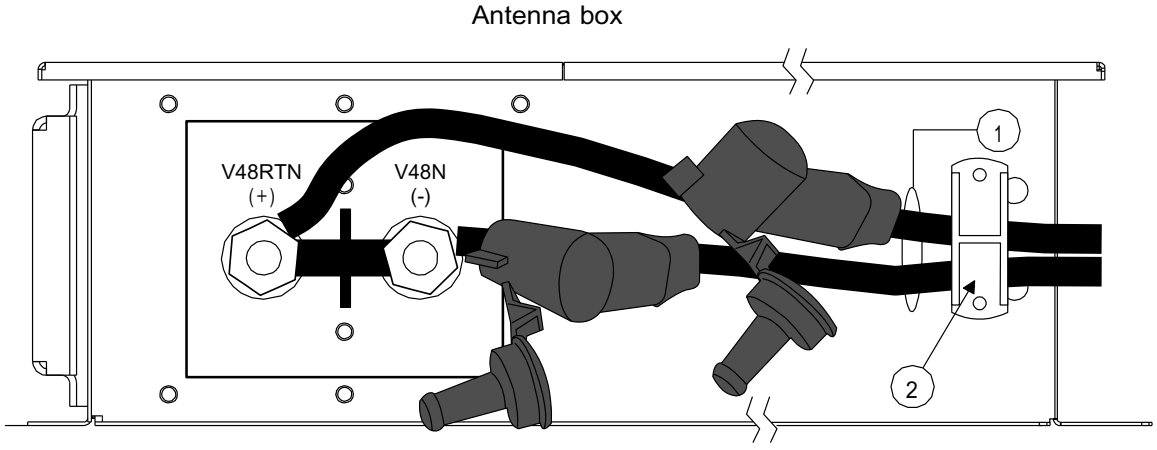
Note

The DC filter module terminals come with #2 cable lugs. A crimping tool is required to connect the lugs to the DC filter cables.

Note

The maximum recommended length of a -48 VDC cable is 100 feet with a voltage drop of 1.5V

The -48 VDC power supply operates from an input range of -36 to -60 VDC; -48 VDC is nominal. The maximum cross section of the cable connecting to the Filter module -48 VDC terminal block is 50 mm^2 (flexible stranded 1/0 AWG). The minimum cable cross section is 33.6 mm^2 (flexible stranded #2 AWG).



1	DC Power input cable
2	Strain relief

Figure 10. Connecting -48 VDC power to the BTS

Steps

1. **Ensure that the cabinet is properly grounded and that the main power breaker is OFF.**

Warning

Danger of lethal voltages! When connecting power cables, there is a risk of electric shock. Make sure that the site power is off and that the cabinet is properly earthed (grounded).

2. **Remove the black rubber boots and disconnect the cable lugs from the terminals.**

3. **Loosen the screws on the strain relief on the antenna box and remove the top of the strain relief.**

4. **Route the cables over the strain relief.**

Warning

Damage to cabinet components or personnel can occur if the power cable is not secure. Ensure that the power cable is secure within the strain relief.

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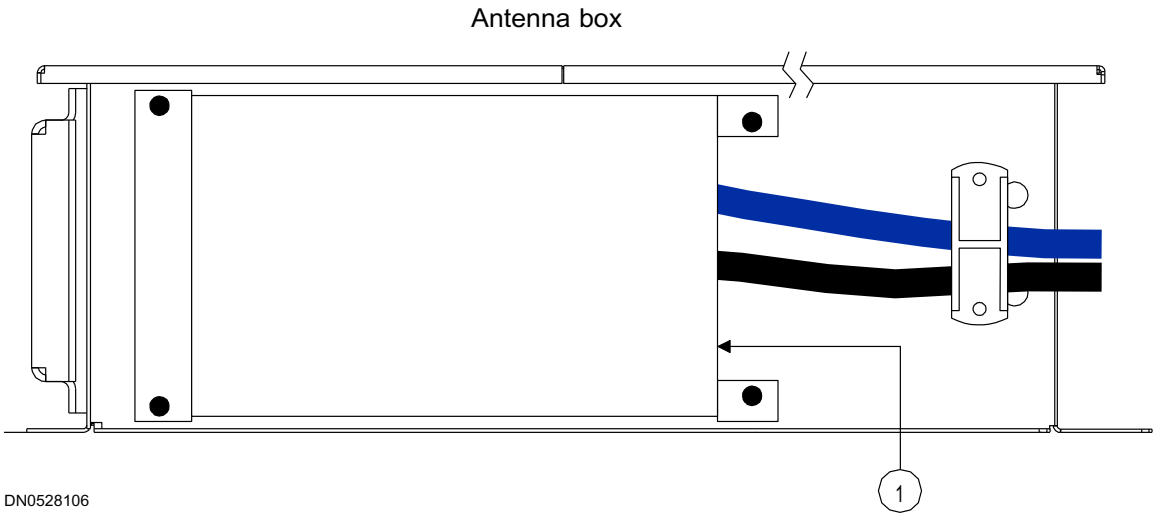
5. **Pull each DC cable through a rubber boot.**
6. **Strip about 2 cm (.8 in) of insulation from the (+) and (-) DC cables.**
7. **Insert the stripped end of each cable into a cable lug and crimp.**
8. **Connect the blue (-) crimped wire to the (-) V 48N connector pole and tighten the nut.**
9. **Connect the black (+) crimped wire to the (-) V 48N connector pole and tighten the nut.**
10. **Torque the nuts (max 14 Nm).**
11. **Pull the black rubber boots over the lugs.**
12. **Replace the top of the strain relief and tighten the screws to secure the cable.**
13. **Tie-wrap any loose cables.**
14. **Install the terminal cover using the four M4 screws.**



1	Terminal cover

Figure 11. Installing the terminal cover (optional)

3.3 Connecting -48 VDC power cables to Mini Outdoor

Before you start

Warning

Damage to cabinet components or personnel can occur if the power cable is not secure. Ensure that the power cable is secure within the strain relief.

Caution

If the DC power cables are reversed during installation, a fuse will blow open in the transceiver unit (TSxA). Before you connect the power cables, check their polarity with a multimeter.

Note

The maximum recommended length of a -48 VDC cable is 75 metres with a voltage drop of 1.5V.

The -48 VDC power supply operates from an input range of -36 to -60 VDC; -48 VDC is nominal. The maximum cross section of the cable connecting to the filter module -48 VDC terminal block is 33.6 mm^2 (flexible stranded #2 AWG). The minimum cable cross section is 13.3 mm^2 (flexible stranded #6 AWG). Due to the small size of the Mini outdoor cable entry area, the following DC cable sizes are recommended to make installation as easy as possible:

Table 1. DC cable sizes for Mini outdoor cabinet

Maximum cable length	**Minimum cable gauge**
30 m (100 ft)	6 AWG
75 m (246 ft)	4 AWG

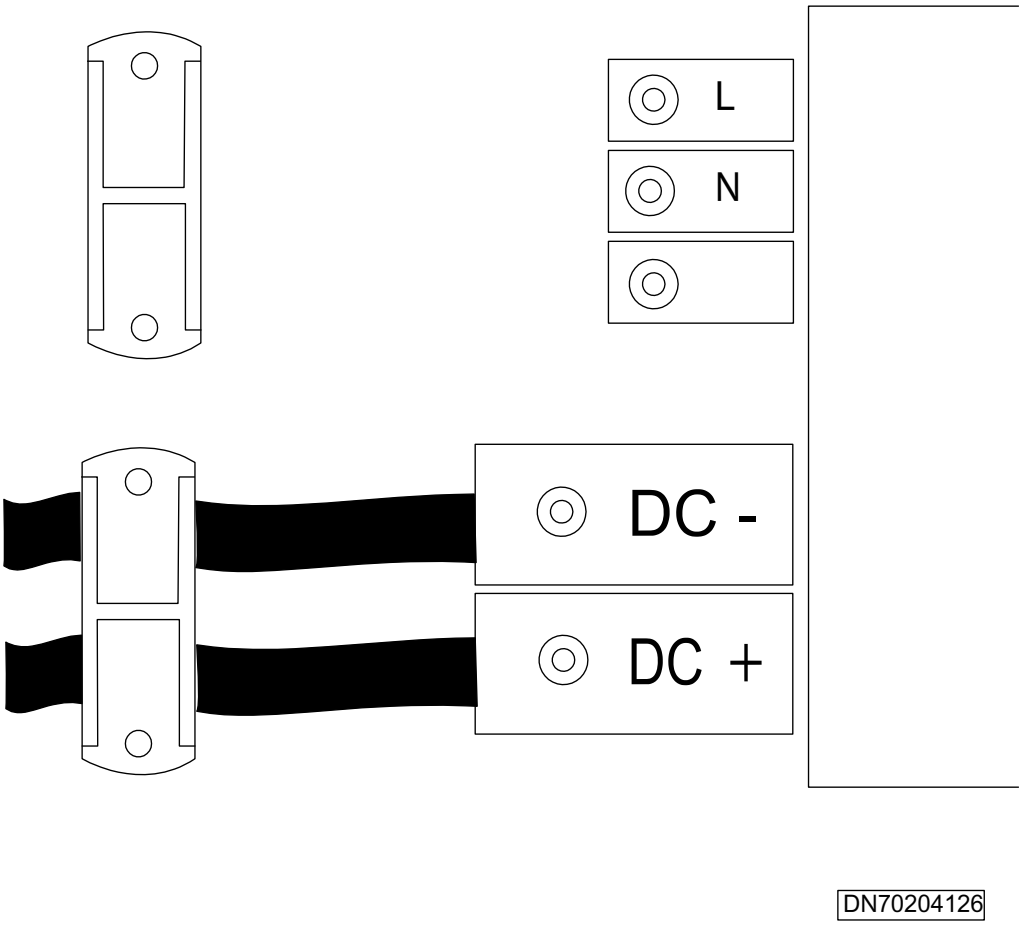


Figure 12. Connecting -48 VDC power to the Mini outdoor BTS

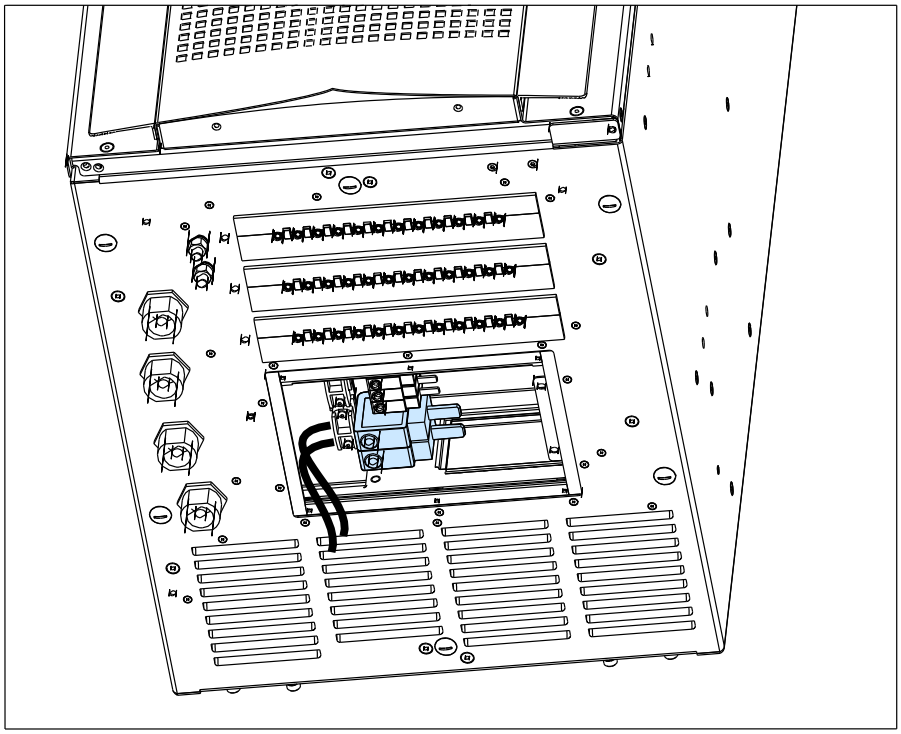


Figure 13. Routing -48 VDC power cables

Steps

1. **Unscrew the cover plate located on the supply terminals on the bottom panel of the cabinet .**

2. **Route the power cable through the gland on the cover plate and then the cable clamp.**

3. **Strip about 13 mm (0.5 in.) of insulation from each of the two exposed wires.**

4. **To open the DC+ and DC- connector terminals, turn the screws anti-clockwise.**

   Use a 5 mm A/F Allen key.

5. **Insert the blue wire into the DC - terminal and then turn the screw clockwise until the connection is tight.**

6. **Insert the black wire into the DC +terminal and then turn the screw clockwise until the connection is tight.**

7. **To secure the power cable, tighten the screws on the cable clamp.**

   For more information on torque settings, see *Torque settings*.

8. **Reinstall the cover plate over the connector terminals and tighten the screws.**

3.4 Connecting +24 VDC power cables

Summary

Note

When routing power cables, follow all applicable national, state, and local regulations.

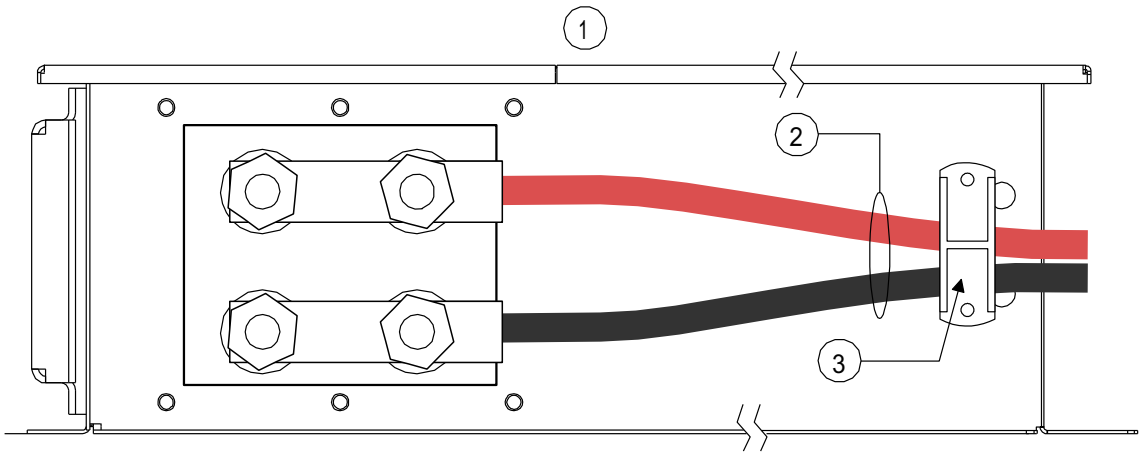
Note

The +24 VDC (DCFB) Filter unit is optional equipment. You must remove the default -48 VDC Filter unit from the antenna box and install the +24 VDC Filter unit. To place an order, contact your local Nokia representative.

Note

The NEMA two-hole compression lugs that are required for power connections, and all required additional hardware, are included as part of the FIKA Installation Kit.

The +24 VDC power supply operates from an input range of +20 to +32 VDC. The +24 VDC power supply is nominal. The recommended cable for connecting to the +24 VDC Filter unit terminals is flexible 95 mm^2 (3/0 AWG), type CSA TEW or UL Style 1015.



1	Antenna box
2	DC power input cables
3	Strain relief

Figure 14. Connecting +24 VDC power to the BTS

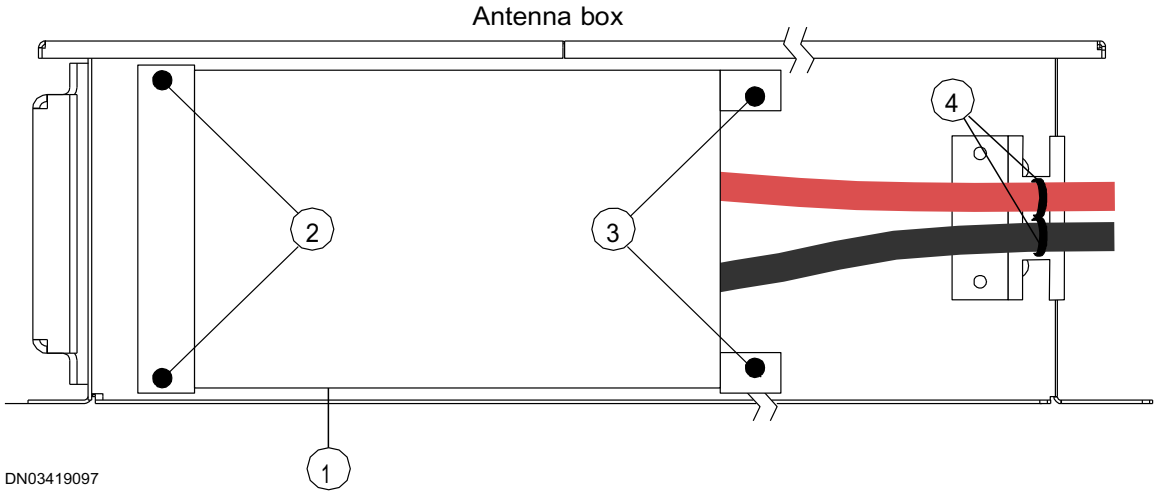


Figure 15. Installing the +24 VDC Filter unit terminal cover

1	Terminal Cover
2	M4x12 Screws
3	M4 Nuts
4	Tie Wraps

Steps

1. **Ensure that the cabinet is properly grounded and that the mains power breaker is OFF.**

Warning

Danger of lethal voltages! When connecting power cables, there is a risk of electric shock. Make sure that the site power is off and that the cabinet is properly earthed (grounded).

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2. **Remove the existing plastic strain relief bracket, located to the rear of the DCFB, from the antenna box.**

3. **Position the new strain relief bracket supplied using two M4x8 screws and M4 washers as shown in the *Connecting +24 VDC power to the BTS* figure.**

   Insert screws from the inside of the antenna box and secure them into the threaded holes in the bracket.

4. **Locate the +24 VDC power input cables.**

5. **Route the cables over the strain relief.**

Warning

Damage to cabinet components or personnel can occur if the power cable is not secure. Ensure that the power cable is secure within the strain relief.

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6. **Strip about 2 cm (.8 in.) of the power cables.**

7. **Using emory cloth or other suitable method, bring the mating surfaces of all unplated power connections to a bright finish.**

8. **Coat the exposed power cable conductors with antioxidant.**

9. **Insert the stripped end of each cable into a two-hole compression lug and crimp.**

10. **Install the +24VP(+) cable lug.**

    Remove the nuts from the +24VP(+) threaded studs of the DCFB. Install the red +24VP(+) cable lug on studs and loosely secure with removed nuts.

11. **Install the +24VN(-) cable lug.**

    Remove the nuts from the +24VN(-) threaded studs of the DCFB. Install the black +24VN(-) cable lug on the studs and loosely secure with removed nuts.

12. **Torque the four installed nuts.**

13. **Secure the cable to the strain relief bracket with tie wrap included in the Installation Kit.**

14. **Install the terminal cover using four M4x8 mounting screws included in the Installation Kit.**

15. **Using tie-wrap or lacing cord, tie the positive and negative power cables together every meter (3 ft) along the length.**

3.5 Connecting +24 VDC power cables to Mini Outdoor

Before you start

Warning

Risk of personal injury. Do not touch the fans.

Caution

If the DC power cables are reversed during installation, a fuse will blow open in the transceiver unit (TSxA). Before you connect the power cables, check their polarity with a multimeter.

Note

The maximum recommended length of a + 24 VDC cable is 30 metres with a voltage drop of 1.5V.

The +24 VDC power supply operates from an input range of +20 to +32 VDC; +24 VDC is nominal. The maximum cross section of the cable connecting to the filter module +24 VDC terminal block is 33.6 mm^2 (flexible stranded #2 AWG). The minimum cable cross section is 13.3 mm^2 (flexible stranded #6 AWG). Due to the small size of the Mini outdoor cable entry area, the following DC cable size is recommended to make installation as easy as possible:

Table 2. DC cable size for Mini outdoor cabinet

Maximum cable length	**Minimum cable gauge**
30 m (100 ft)	4 AWG

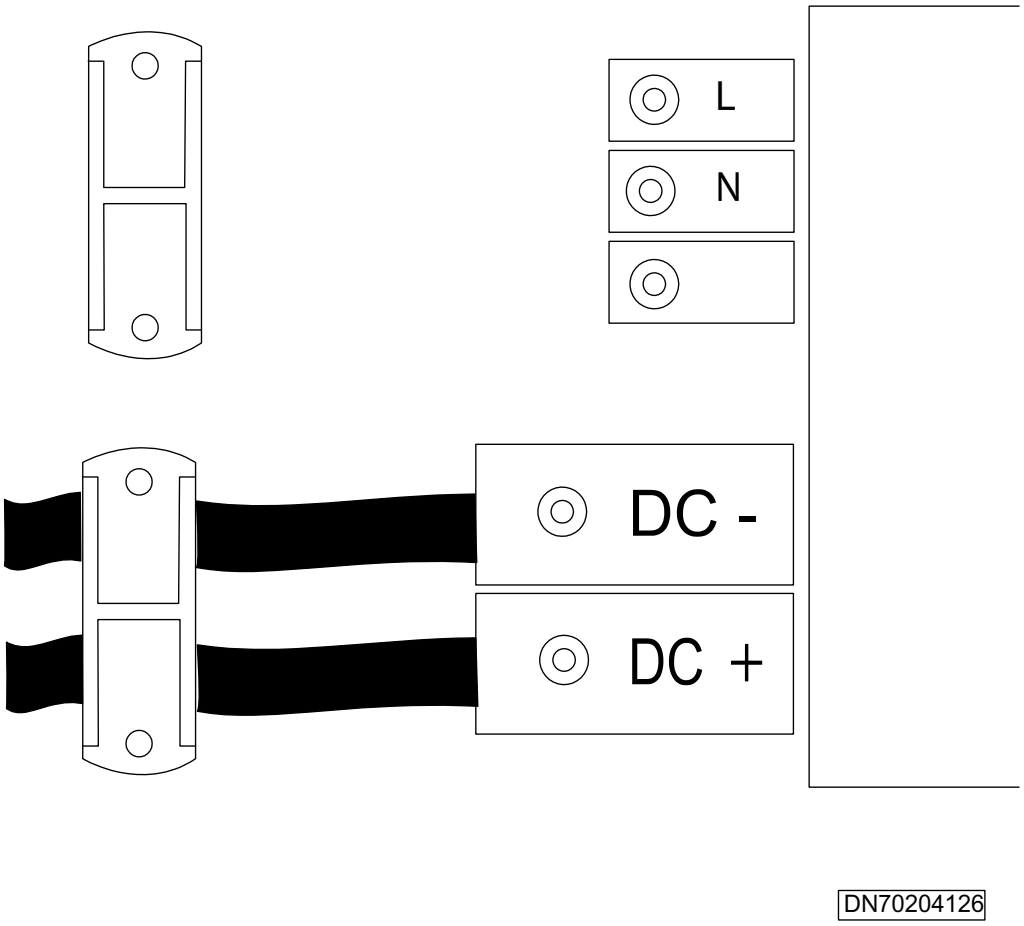


Figure 16. Connecting +24 VDC power cables

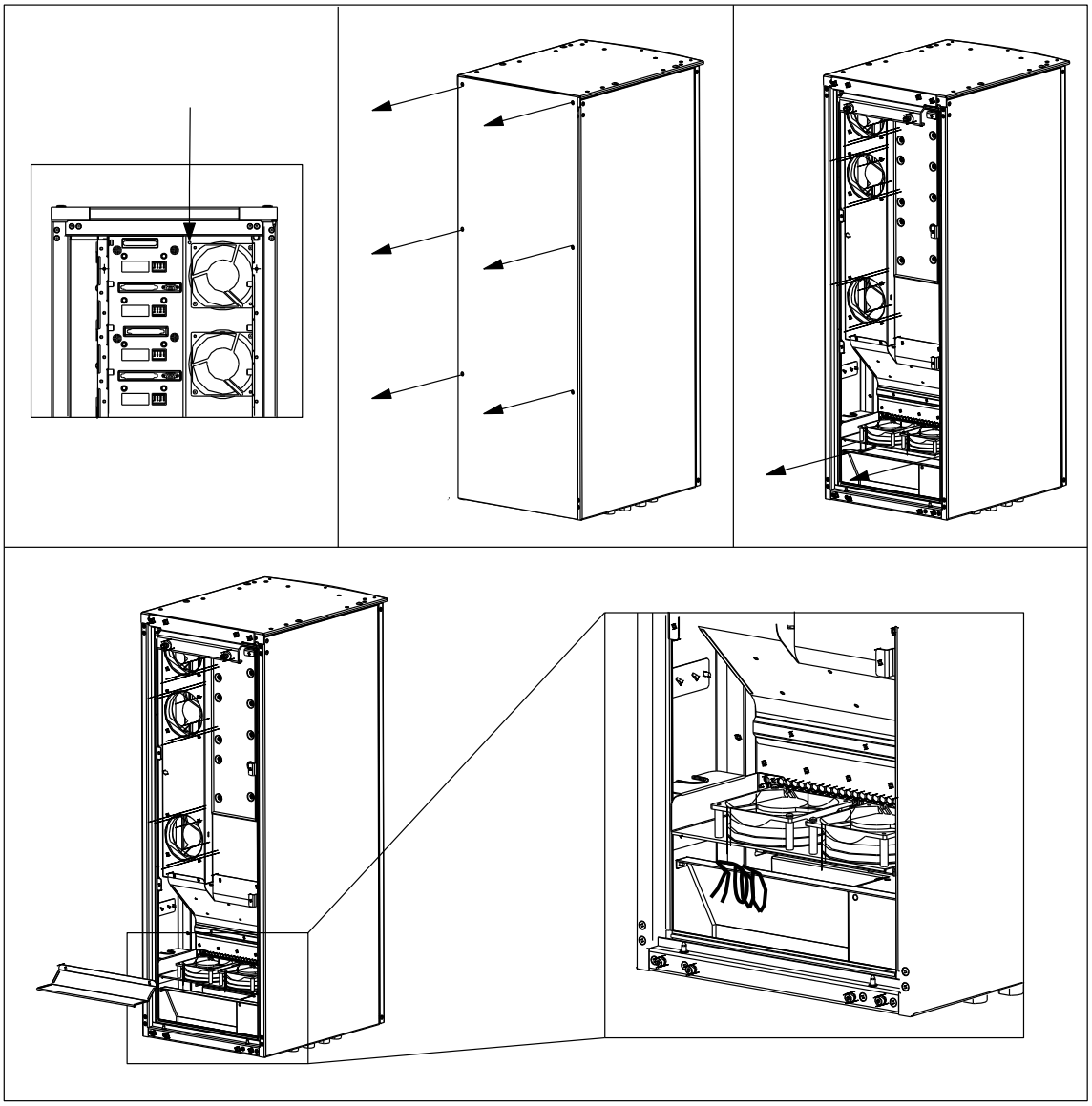


Figure 17. Connecting +24 VDC power

Steps

1. Ensure that the cabinet is properly grounded and the main power breaker is off.

2. **Cut the outer sheath each of the DC power cables to expose the internal wires.**

3. **Unscrew the cover plate located on the supply terminals on the bottom panel of the cabinet .**

4. **Route the power cable through the gland on the cover plate and then through the cable clamp.**

5. **Strip about 13 mm (0.5 in.) of insulation from each of the two exposed wires.**

6. **To open the DC+ and DC- connector terminals, turn the screws anti-clockwise.**

   Use a Pozi screwdriver.

7. **Insert the black wire into the DC - terminal and then turn the screw clockwise until the connection is tight.**

8. **Insert the red wire into the DC + terminal and then turn the screw clockwise until the connection is tight.**

9. **Reinstall the top of the cable clamp and tighten the screws to secure the cables.**

   For more information on torque settings, see *Torque settings*.

10. **Tie-wrap any loose cables.**

11. **Reinstall the cover plate over the connector terminals and tighten the screws.**

12. **Remove the rear panel of the cabinet.**

    Open the cabinet door and unscrew the screw holding the rear panel at the top of the cabinet. Then, unscrew the six screws on the rear panel of the cabinet. Gently push a screwdriver through the middle hole of the rear panel to release it.

13. **Remove the four screws retaining the fan plate.**

    Use a T20 Torx driver.

14. **Remove the two screws securing the baffle plate to the fan plate.**

Use a T15 Torx driver. After removing the screws, bend the baffle plate upwards to view the power supply cabling.

15. Disconnect the power supply leads on the outside of the filter box.

16. Connect the +24V cables.

Connect the +24V cable connector to +DC connector and -24V to -DC connector.

17. Reinstall the baffle plate and fan tray.

Refitting is the reverse procedure of removal.

18. Reinstall the rear panel.

First install the fixing screw inside the cabinet. Then install the rear panel with 6 screws.

19. Connect the power cables to the front of the power supply unit (PWSC).

4 Replacing grounding cables

4.1 Removing grounding cables

Summary

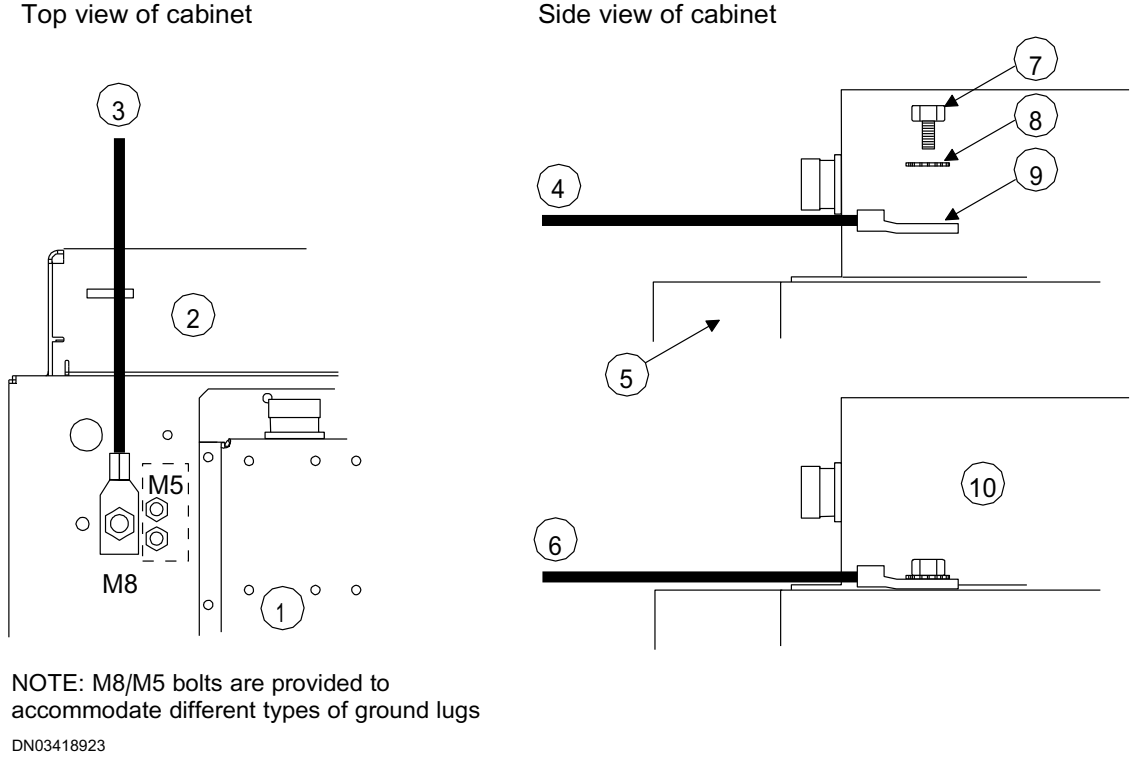


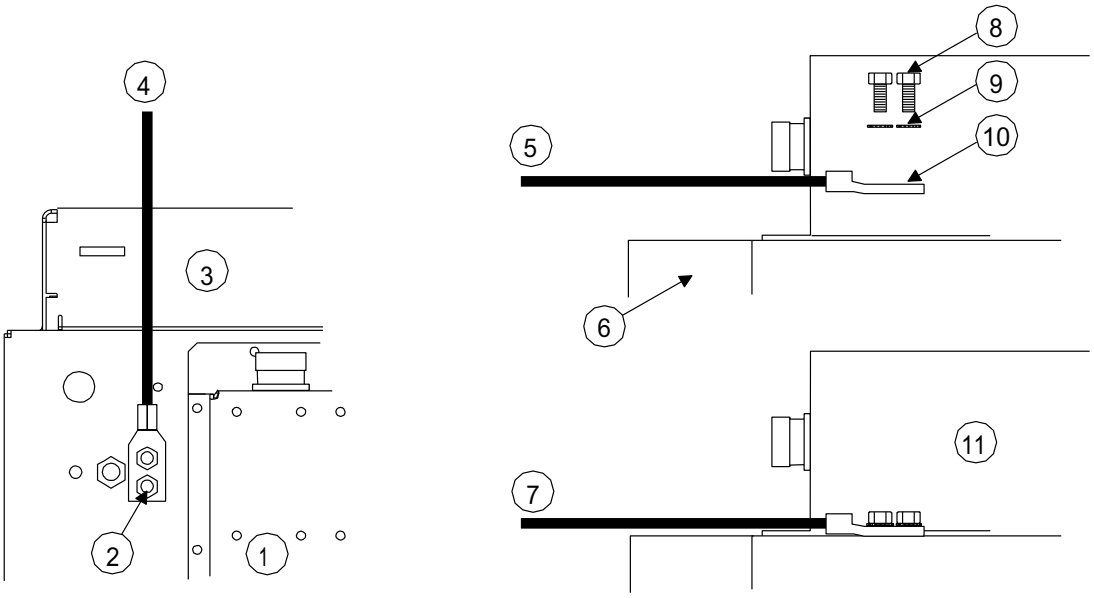
Figure 18. Grounding the cabinet in a standard installation

1	Antenna box
2	Back wall

3	Cabinet grounding cable
4	Cabinet grounding cable
5	Back wall
6	Cabinet grounding cable
7	Bolt
8	Star washer
9	Ground lug
10	Antenna box

Top view of cabinet

Side view of cabinet



DN03418935

1	Antenna box
2	M5 (2 places)
3	IDCM back
4	Cabinet grounding cable
5	Cabinet grounding cable
6	Back wall
7	Cabinet grounding cable
8	Bolt
9	Star washer

10	Ground lug
11	Antenna box

Figure 19. Grounding the cabinet in a NEBS installation

Steps

1. **Power down the BTS.**
2. **Turn the mains power breaker off.**
3. **At the top left of the cabinet, loosen the grounding bolt and remove the ground bolt and star washer.**
4. **Remove the lug end of the grounding cable.**
5. **Replace the grounding bolt and star washer and tighten them.**

4.2 Overview of connecting grounding cables

Summary

Note

To access cabinet interface connections, remove the cabinet roof from the BTS and replace the roof when all work is complete.

Note

For connecting grounding cables, use an 8 mm (0.31 in.) single-hole lug and a 5 mm (0.2 in.) or 6 mm (0.24 in.) two-hole lug (NEBS) PE connector.

Steps

1. *If* you perform a standard installation,

   Then

   See Connecting the grounding cable for a standard installation.

2. *If* you perform a NEBS installation,

   Then

   See Connecting the grounding cable for a Network Equipment Building Systems (NEBS) installation.

4.3 Connecting the grounding cable for a standard installation

Before you start

If the grounding cable must be routed through the entry kit, then route it before starting this procedure.

Summary

The BTS cabinet has two grounding options:

- Standard
- NEBS

For a standard installation, use an 8 mm (0.31 in.) single-hole lug. For a NEBS installation, use a 5 mm (0.2 in.) or 6 mm (0.24 in.) two-hole lug.

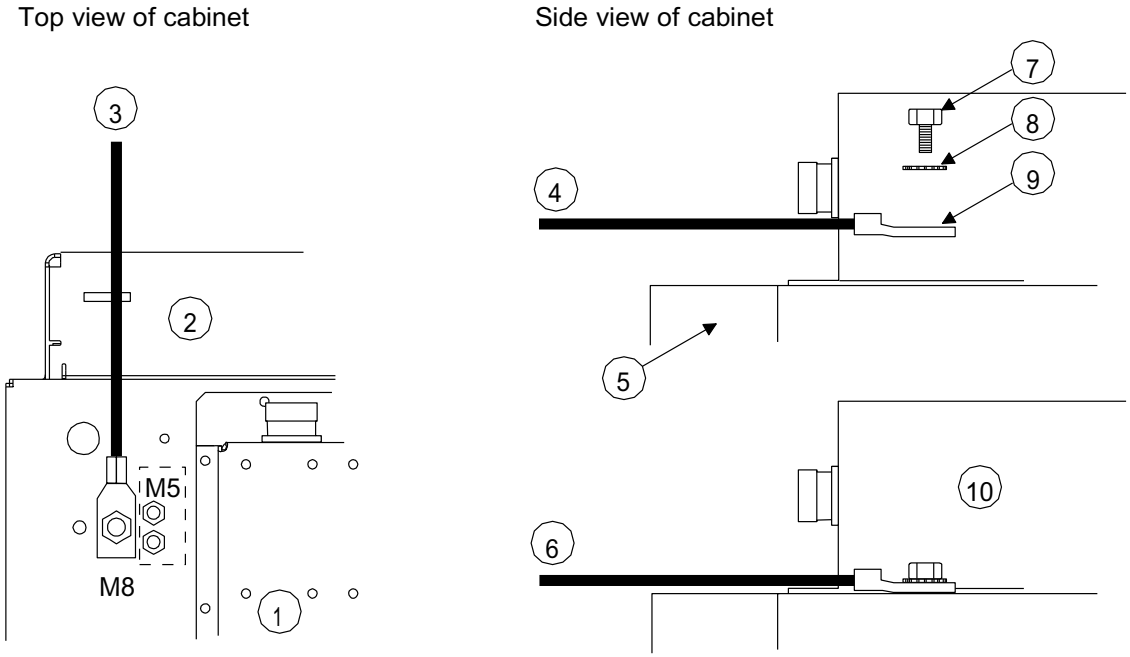


Figure 20. Grounding the cabinet in a standard installation

1	Antenna box
2	Back wall
3	Cabinet grounding cable
4	Cabinet grounding cable
5	Back wall
6	Cabinet grounding cable
7	Bolt
8	Star washer
9	Ground lug
10	Antenna box

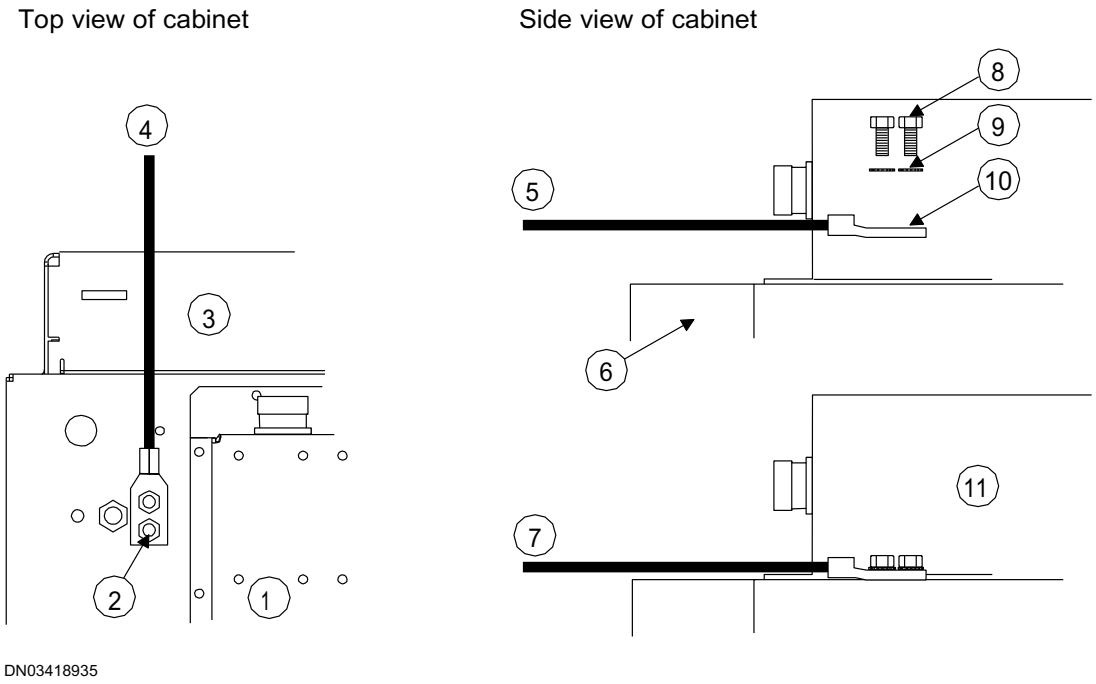


Figure 21. Grounding the cabinet in a NEBS installation

1	Antenna box
2	M5 (2 places)
3	Back wall
4	Cabinet grounding cable
5	Cabinet grounding cable
6	Back wall
7	Cabinet grounding cable
8	Bolt
9	Star washer
10	Ground lug
11	Antenna box

Steps

1. At the top left of the cabinet, unscrew the grounding bolt(s).

2. Strip about 2 cm (0.75 in.) off from the main grounding cable.

3. *If* this is a NEBS installation,

   Then

   Perform the following tasks:

   a. Use an emery cloth or other suitable method to bring the mating surfaces of all unplated ground studs to a bright finish.

   b. Coat the exposed ground cable conductor with antioxidant.

4. Insert the stripped end of the cable into a cable shoe lug and crimp it.

5. Fit the grounding bolt and star washer through the lug end of the grounding cable.

6. Tighten the bolt to the appropriate torque setting.

4.4 Connecting the grounding cable for a Network Equipment Building Systems (NEBS) installation

Summary

Note

For NEBS installations, use a two-hole compression lug to connect the ground conductor to the two M5 cabinet ground studs.

Note

When making ground connections to the BTS, do not intermix conductors of dissimilar metals.

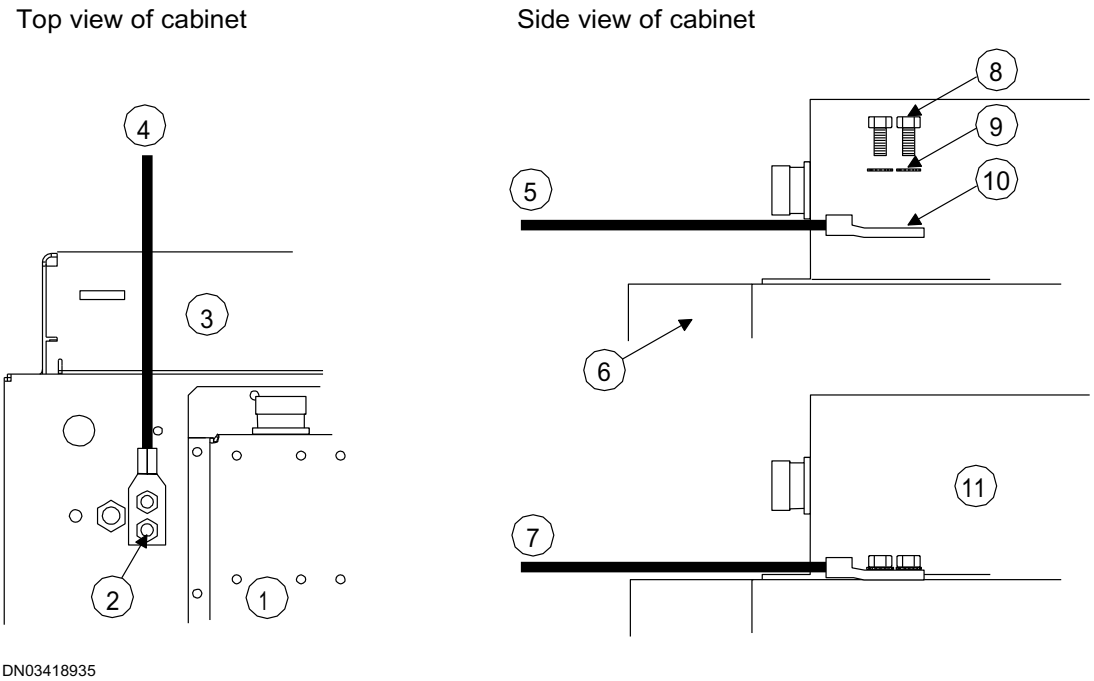


Figure 22. Grounding (earthing) the cabinet in NEBS compliant installations

1	Antenna box
2	M5 (2 places)
3	Back wall
4	Cabinet grounding cable
5	Cabinet grounding cable
6	Back wall
7	Cabinet grounding cable
8	Bolt
9	Star washer
10	Ground lug
11	Antenna box

Steps

1. At the top left of the cabinet, unscrew the grounding bolt(s).

2. **Strip about 2 cm (0.75 in.) off from the main grounding cable.**

3. **Using emery cloth or other suitable method, bring the mating surfaces of all unplated ground connections to a bright finish.**

4. **Coat the exposed grounding cable conductor with antioxidant.**

5. **Insert the stripped end of the cable into a cable shoe lug and crimp it.**

6. **Fit the grounding bolt and star washer through the lug end of the grounding cable.**

7. **Tighten the bolt to the appropriate torque setting.**

4.5 Connecting grounding cables to Mini outdoor

Before you start

The cable cross-section dimensions must meet national, state, and local regulations. For connecting grounding cables, use an 8 mm (0.31 in.) single-hole lug or a two-hole lug PE connector of 5 mm (0.2 in.) or 6 mm (0.24 in.).

Steps

1. **Unscrew the nut(s) from the ground connection on the underside of the cabinet.**

2. **Strip about 2 cm (0.75 in.) off from the main grounding cable.**

3. **Insert the stripped end of the cable into a suitably sized cable shoe lug and crimp it.**

4. **Fit the lug end of the grounding cable over the ground connection(s).**

5. **Install the star washer(s) and tighten the grounding nut(s) on the grounding cable stud(s).**

   For torque values, see *Torque settings*.

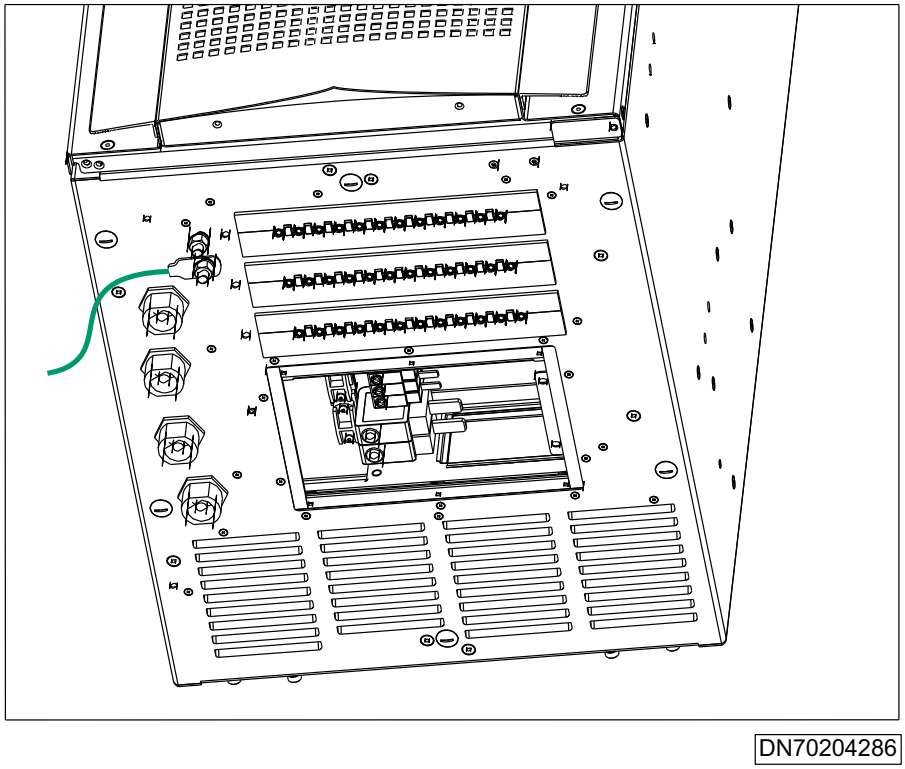


Figure 23. Connecting grounding cable to Mini outdoor BTS

Related Topics

Overview of connecting AC power cables

Reference

Power requirements for AC

Overview of connecting grounding cables

Reference

Grounding (earthing) requirements