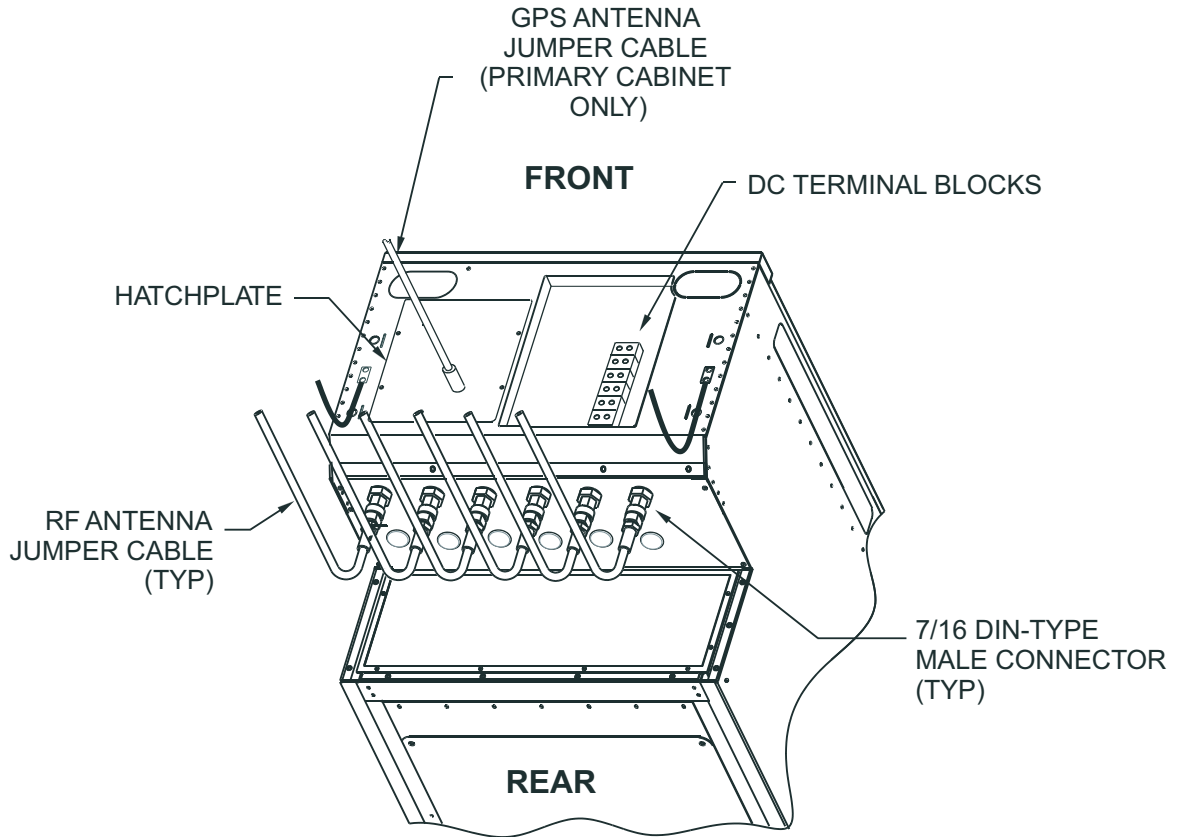


-
- 5 Repeat Steps 1 through 4 for all RF antenna jumper cables.



RIGHT ANGLE RF ANTENNA CONNECTORS MAY BE USED AT THE CABINET CONNECTIONS.

END OF STEPS

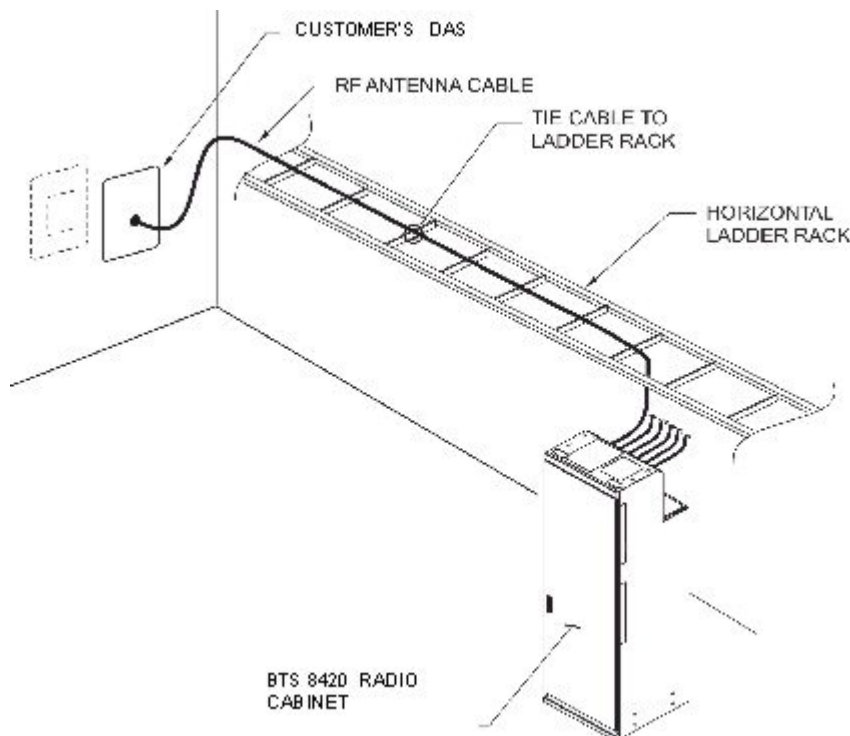
Route and connect indoor RF antenna jumper cables to customer provided DAS

Use the following procedure to route and connect the RF antenna jumper cables to the antenna cables at the DAS.

- 1 Route the RF antenna jumper cable from the radio cabinet, via the ladder rack, to the customer provided DAS. Refer to the figure below. (This figure applies to both the BTS 8420 and AWS 8420 radio cabinets.)

Important! When performing the next step, secure the cable to the ladder rack using standard procedures, including the use of cable ties.

- 2 Tie the RF antenna jumper cables to the ladder rack.



Important! Skip the next two steps if the RF antenna jumper cable is already terminated at the hatchplate end.

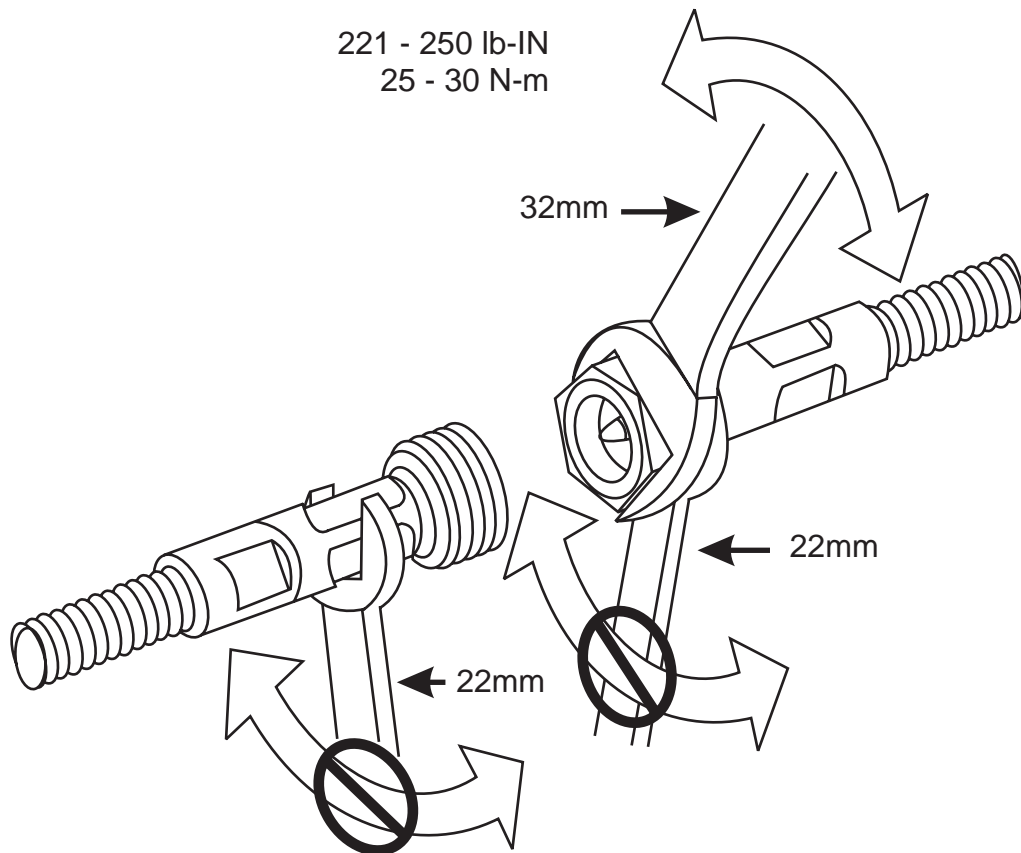
- 3 Cut the cable to the correct length -- allowing adequate slack.

Important! If the cable marking is cut off, re-mark the RF antenna jumper cable after cutting.

- 4 Terminate the end of the cable, using the supplied connector. Use the appropriate stripping tool part number provided in Chapter 3.
- 5 Connect the RF antenna jumper cable to the applicable RF antenna connection. Refer to the figure below.

Important! Before system operation, the RF antenna jumper cables must be tested, and the power output of the amplifiers adjusted. Those tasks are a part of system test and integration.

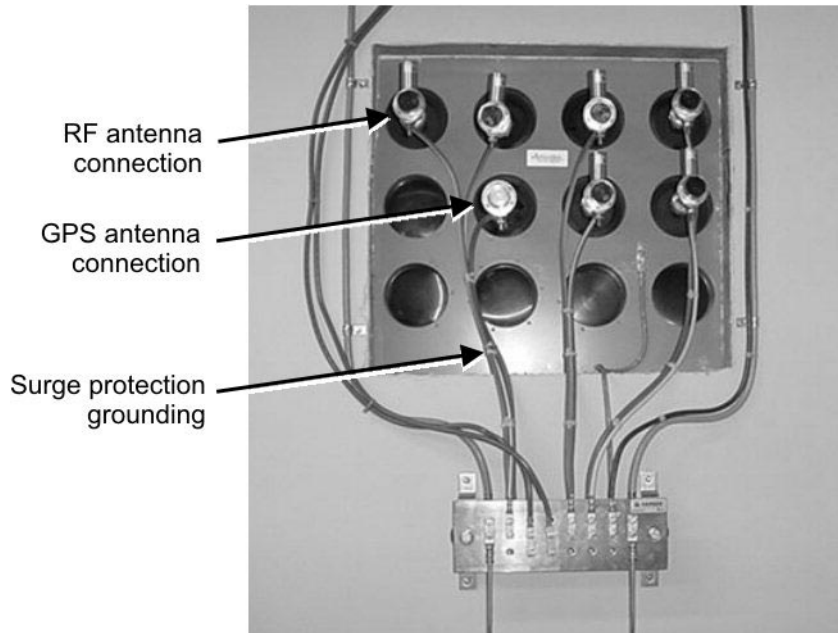
- 6 Torque the RF antenna jumper cable connections at the antenna connection to 25 Nm (221 in-lb), using the method shown in the figure below.



Important! When connecting/disconnecting an Alcatel-Lucent RF coaxial jumper cable assembly to/from any 7-16 DIN female receptacle connector at the antenna, it is highly recommended that the cable assembly be connected/disconnected as shown in the figure below. Please note that the mating receptacle connector

requires a wrench for support to hold it in place. Wrenches for connecting/disconnecting the mating RF coaxial jumper cable's 7-16 DIN male plug, which is equipped with a rotating coupling nut, are required.

- 7 Repeat Steps 1 through 6 for all RF antenna jumper cables.



END OF STEPS



Finish installation of indoor BTS 8420/AWS 8420 radio cabinet

Overview

Purpose

This section provides information for finishing the installation of the *indoor* BTS 8420/AWS 8420 radio cabinet.

Contents

| | |
|--|------|
| Final indoor BTS 8420/AWS 8420 radio cabinet installation procedures | 8-12 |
|--|------|



Final *indoor* BTS 8420/AWS 8420 radio cabinet installation procedures

Overview

This procedure module describes the tasks that must be completed to finish the installation of the *indoor* BTS 8420/AWS 8420 radio cabinet.

System test

Following installation of the indoor BTS 8420/AWS 8420 radio cabinet, the system should be tested before being put into operation. System test procedures are not covered in this installation document. Information concerning system test and integration is contained in *CDMA Modcell and Base Station Integration Engineering Handbook (IEH 238)*.

Replace or close all access panels

Use the following procedure to replace or close all access panels and doors.

- 1 Make sure the T1/E1 lines and alarm cable connectors are securely connected at the BTS 8420/AWS 8420 radio cabinet.

- 2 Check the BTS 8420/AWS 8420 radio cabinet for tools, materials, and parts. Remove any tools, materials, and parts from the BTS 8420 radio cabinet.

- 3 Close the front door on the BTS 8420/AWS 8420 radio cabinet.

END OF STEPS



Appendix A: Installing 3GP24i power cabinet, if applicable

Overview

Purpose

The purpose of this appendix is to provide installation instructions when installing a 3GP24i power cabinet with the indoor BTS 8420 radio cabinet. (Power Alarm connections were already covered in Chapter 6). Component installation in the 3GP24i power cabinet is also covered. Instructions are also provided for the installation and connection of first and second EZBFi battery frames to the 3GP24i power cabinet. Note that battery installation in a EZBFi battery module is referenced to Chapter 8 where the procedures are supplied.

Contents

| | |
|--|------|
| Safety precautions and wiring overview | A-2 |
| Safety precautions | A-3 |
| Power wiring overview | A-4 |
| How to make 3GP24i power cabinet DC and AC connections | A-5 |
| Access to the 3GP24i power cabinet | A-6 |
| Pre-installation instructions | A-9 |
| How to install DC power cables | A-12 |
| How to install the AC utility power cables | A-20 |
| How to install 3GP24i power cabinet components | A-28 |
| How to install the rectifiers in the 3GP24i power cabinet | A-29 |
| How to install the DC circuit breakers in the 3GP24i power cabinet | A-32 |
| Prepare to install batteries in the 3GP24i power cabinet | A-35 |
| How to install batteries in the 3GP24i power cabinet | A-40 |



Safety precautions and wiring overview

Overview

Purpose

The overall safety precautions that must be observed during the installation of the 3GP24i power cabinet with BTS 8420/AWS 8420 cabinets are provided here.

Contents

| | |
|---------------------------------------|---------------------|
| Safety precautions | A-3 |
| Power wiring overview | A-4 |



Safety precautions

The following safety precautions should be read and understood before starting the installation of power cables.



WARNING

Electrical Energy Hazard

Failure to follow the order of the installation procedure (as written) can result in an energized AC or DC circuit, which creates an electrical shock hazard.

Follow these rules:

- 1. Perform installation steps in the order provided.*
- 2. Do not connect AC power until instructed to do so.*
- 3. When installing battery modules, do not connect battery disconnect cables on the battery retaining brackets until instructed to do so.*
- 4. When installing battery modules, do not connect DC cables until instructed to do so.*
- 5. Observe and strictly follow all additional safety precautions.*
- 6. When completing electrical connections, always use tools that are properly insulated.*

CAUTION

Damage to electronic components

Handling of plug-in modules without the use of an ESD wrist strap can result in damage to electronic circuits.

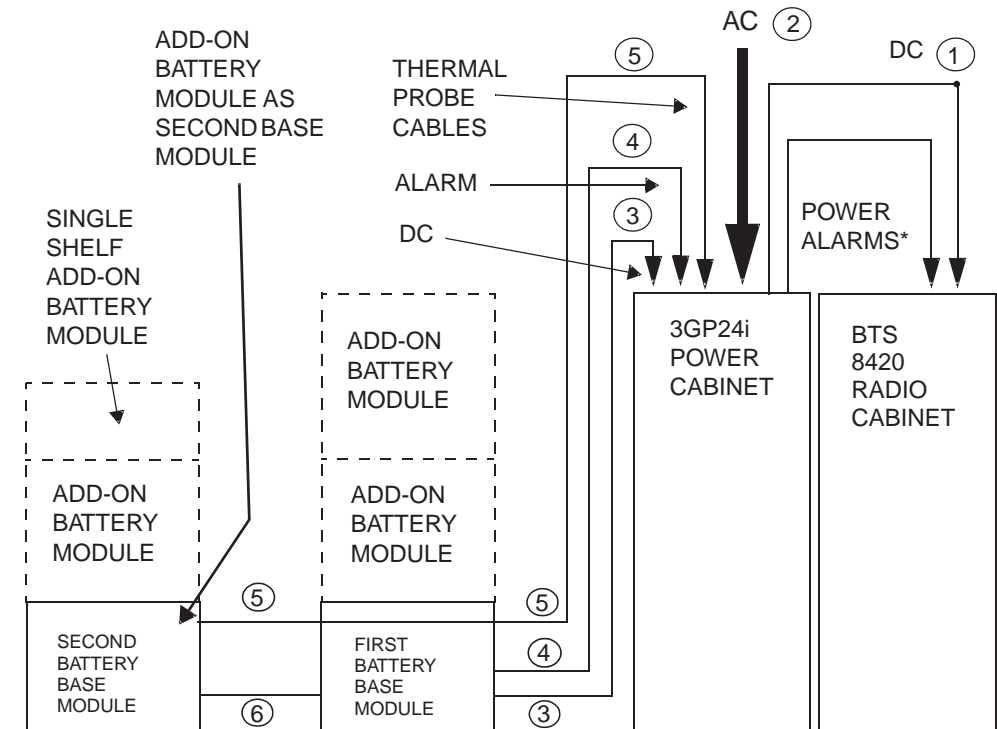
Always wear a properly grounded ESD strap and follow ESD procedures when handling any electronic components.



Power wiring overview

This chapter provides instructions for the power interconnections between the 3GP24i power cabinet and the BTS 8420/AWS 8420 radio cabinet, as well as the connections from EZBFi battery frames to the 3GP24i power cabinet. Also included are AC utility connection to the 3GP24i power cabinet. Refer to the figure below for a key to the following numbered list.

1. DC cable connections between the power cabinet and BTS 8420/AWS 8420 radio cabinet
2. AC utility connection to the 3GP24i power cabinet
3. DC cable connections between the first EZBFi battery base module and the power cabinet
4. Fuse alarm cable connections between the first battery base module and the power cabinet and the two base modules
5. Thermal probe cable connections between the battery base modules and the power cabinet
6. DC cable connections between the first EZBFi battery base module and the second EZBFi battery base module.



* Power alarm connections to the BTS 8420 radio cabinet were covered in Chapter 5.



How to make 3GP24i power cabinet DC and AC connections

Overview

Purpose

This section describes the procedures for installing DC power cables to/from the 3GP24i power cabinet when installing it with an indoor BTS 8420/AWS 8420 radio cabinet. Also included are instructions for making AC utility power connections to the 3GP24i power cabinet.

Note that grounding cables were installed in Chapter 4 after placement and anchoring of the 3GP24i power cabinet.

Contents

| | |
|--|----------------------|
| Access to the 3GP24i power cabinet | A-6 |
| Pre-installation instructions | A-9 |
| How to install DC power cables | A-12 |
| How to install the AC utility power cables | A-20 |



Access to the 3GP24i power cabinet

Overview

This procedure module provides instructions for access into the 3GP24i power cabinet.

Description of 3GP24i power cabinet door

The door is secured with a single latch on the left side. The door is right-hinged and will swing open to the right.



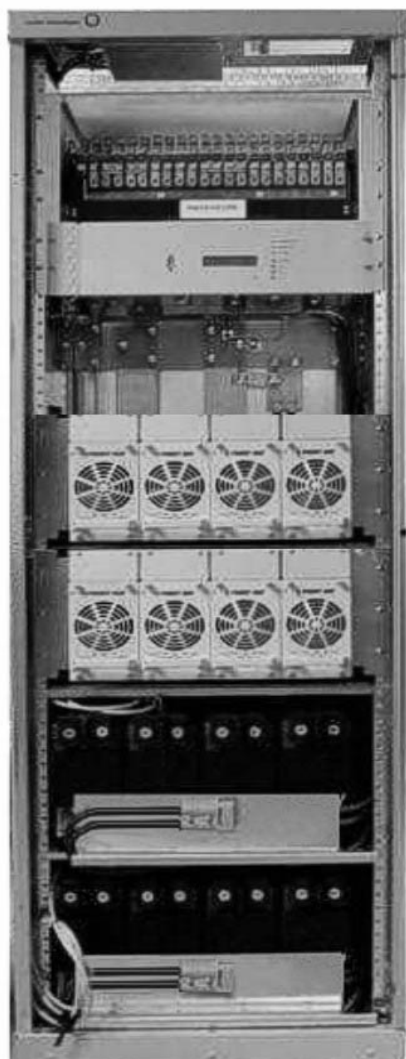
Open front door of the 3GP24i power cabinet

To open the front door of the 3GP24i power cabinet: unlock the latch, pull out the latch, and turn the latch to the right.



Inside view of the 3GP24i power cabinet

The figure below shows the 3GP24i power cabinet with the door open.



DC
distribution

Control

Rectifier
shelf 1

Rectifier
shelf 2 (optional)

Battery
shelf 2

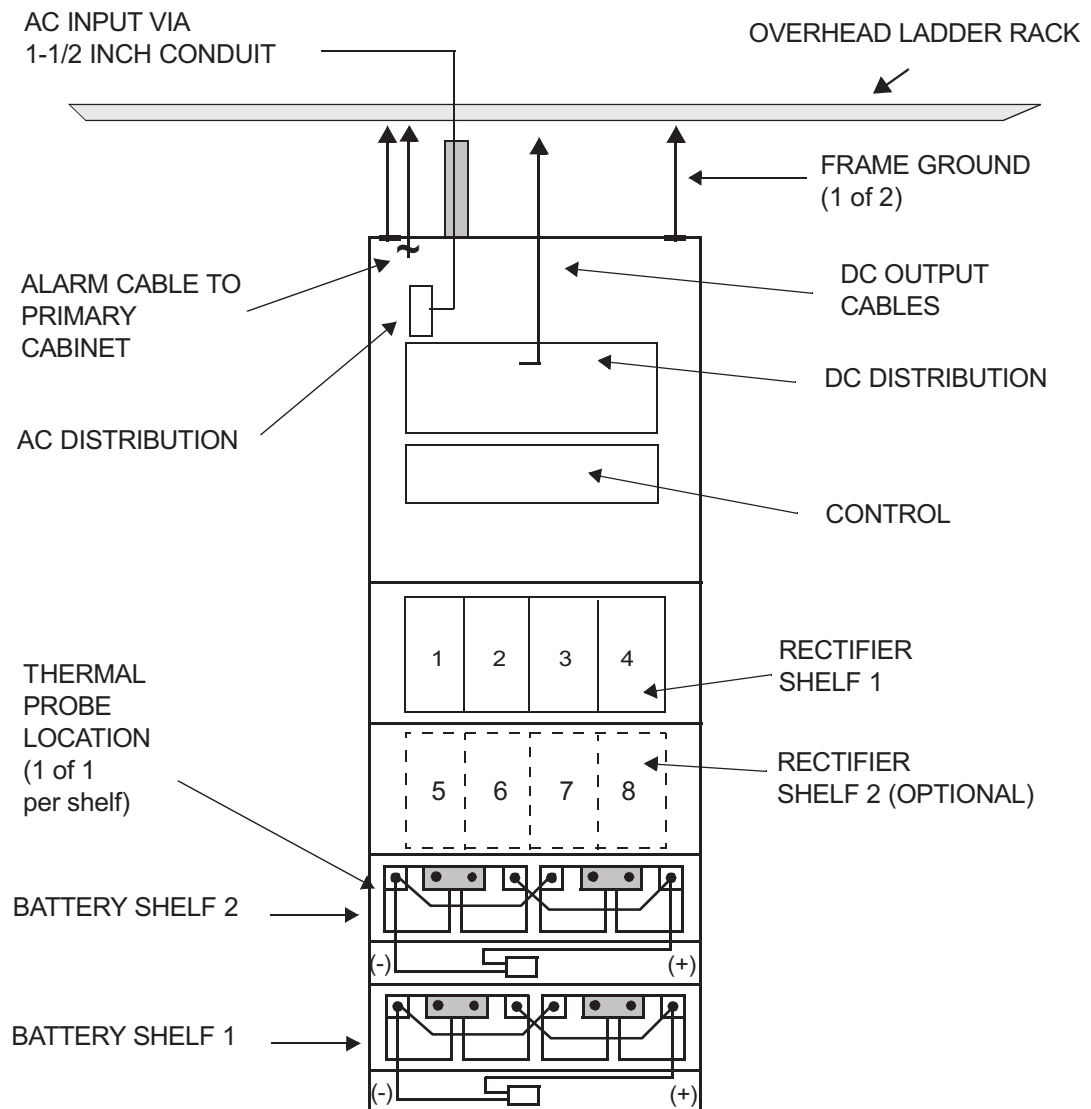
Battery
shelf 1



Pre-installation instructions

Wiring overview

AC utility power input enters the 3GP24i power cabinet at the top of the unit. AC is connected to the AC distribution panel. DC load output and return wiring enters the 3GP24i power cabinet through the top and is attached to the DC distribution panel. An alarm cable is preinstalled in the 3GP24i power cabinet. This cable exits through the top of the 3GP24i power cabinet and is connected to the BTS 8420/AWS 8420 radio cabinet (refer to Chapter 5). Refer to the figure below for an overview illustration of the wiring.



DC feeders and connection interface

Each BTS 8420/AWS 8420 radio cabinet requires three DC feeds. Refer to the table on the next page for more details on BTS 8420 radio cabinet DC feeders.

Alternate wire gauges may be used for the DC feeders, but shall be sized to limit the round trip voltage drop between the power system output terminals and the BTS 8420/AWS 8420 radio cabinet input terminals to less than one volt (for +24 VDC systems). A current level equal to 80% of the circuit breaker current rating specified shall be used for this calculation. The wire used for the DC feeders shall be rated for the environmental condition in which it is used. The circuit breaker characteristics shall be equivalent to Airpax Inc. model LEL/LML, circuit breakers with Type 51, DC trip delay curve characteristics.

The DC terminal block is located on top of the BTS 8420/AWS 8420 radio cabinet. (See figure on the next page).

Alcatel-Lucent Recommends Class B stranded wire to interface with the DC strip and poke (Phoenix) terminal block. Strip 1-inch of insulation from each DC cable and properly insert into strip and poke terminal block (avoid crimping into the cable insulation). Torque the nut on top of terminal block to 6 Nm (53 in-lb).

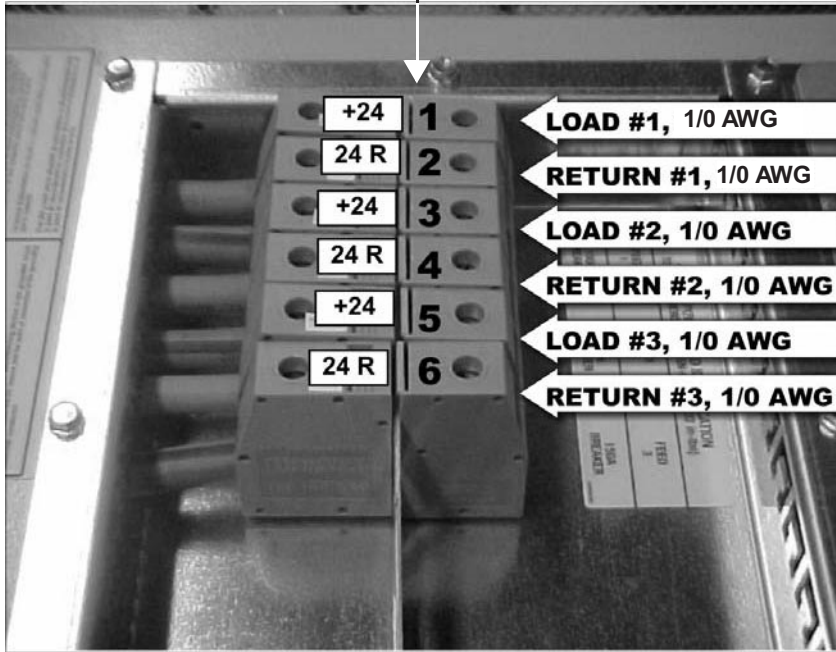
The DC terminal connections may be damaged if the hardware is tightened more than 15 Nm (132 in-lb).

If Class I or finer stranded wire is used, a ferrule must be crimped to the wire before inserting into the strip and poke terminal block to avoid fraying, otherwise it may cause a short circuit and damage the connector. The installation DC feeders shall not be performed in extremely cold temperature (-15 degrees C/-5 degrees F or less).

| DC feeders and the connection interface for the BTS 8420/AWS 8420 radio cabinet | | | | |
|--|------------------------|-----------------|--------------------|--|
| BTS 8420/AWS 8420 radio cabinet | Feeders #1, #2, #3 | | | Maximum wire size at DC terminal block |
| | Circuit breaker (AMPS) | Wire size (AWG) | Max. Length (Feet) | |
| +24 VDC | 150 | 1/0 | 40 | 50 mm ² (1/0 AWG) |

BTS 8420/AWS 8420 radio cabinet DC power terminal block (front view)

POSITION NUMBER



How to install DC power cables

Overview

This procedure module provides instructions for the installation of DC power cables (feed and return) from the 3GP24i power cabinet to the BTS 8420/AWS 8420 radio cabinet.

Step-by-step instructions are provided for the following tasks:

| |
|---|
| “Label, layout, and route DC cables to 3GP24i power cabinet” (p. A-12) |
| “Connect the BTS 8420/AWS 8420 radio cabinet DC cables at the 3GP24i power cabinet” (p. A-14) |
| “Connect the DC power cables to the BTS 8420/AWS 8420 radio cabinet” (p. A-17) |

Description of DC power cable routing and connections

This procedure module provides instructions for the preparation, routing, and connection of DC power cables (load and return) at the 3GP24i power cabinet.

The indoor BTS 8420/AWS 8420 radio cabinet requires six #1/0 AWG, DC power cables: three red load cables (+) and three grey return cables (-). These cables are provided in kits.

The load cables (red) will be connected to the DC distribution bus in the 3GP24i power cabinet.

The return cables (grey) will be connected to the DC load return bus in the 3GP24i power cabinet.

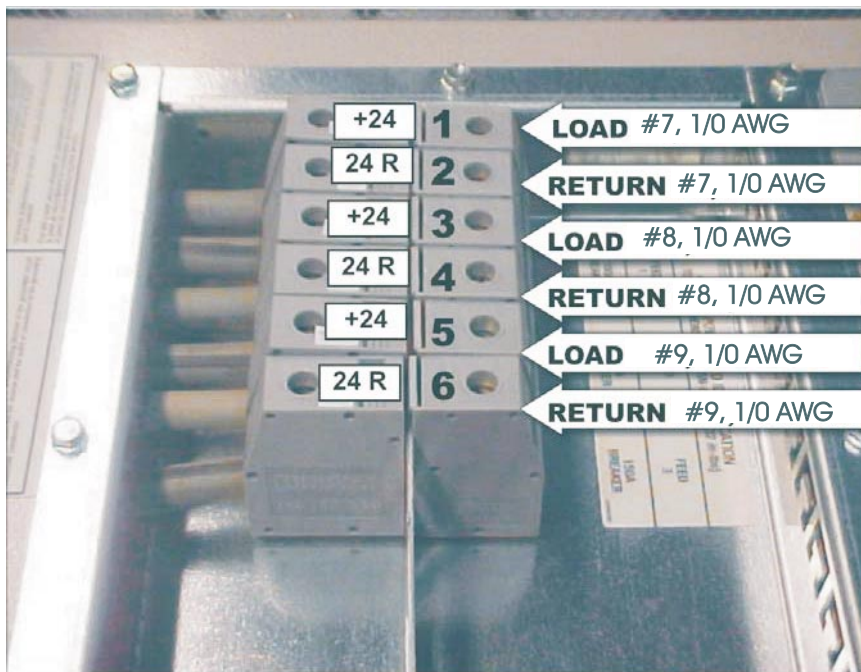
At the BTS 8420 radio cabinet, the DC cables will be connected to the DC terminal block on top of the cabinet.

Label, layout, and route DC cables to 3GP24i power cabinet

Use the following procedure to label, layout and route the DC cables to the 3GP24i power cabinet.

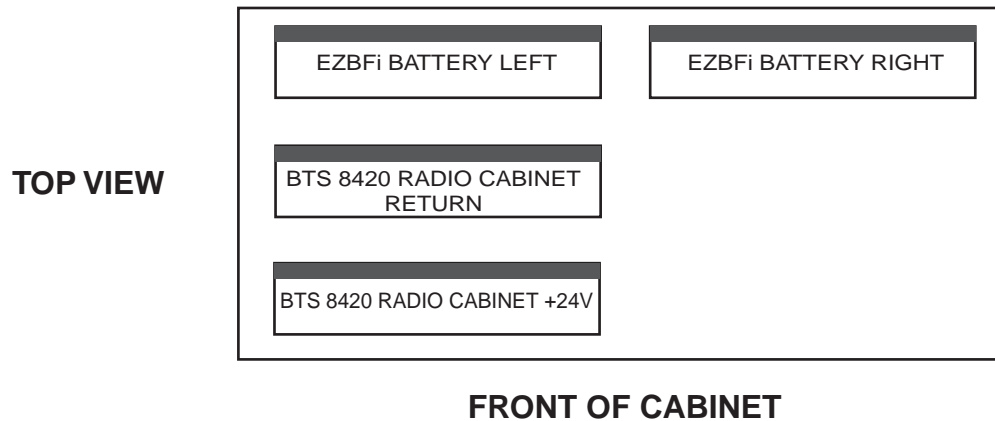
- 1 Label both ends of each +24 VDC (red) cable with a permanent marker or a wire tag as follows:
 - #1/0 AWG: Label L1
 - #1/0 AWG: Label L2
 - #1/0 AWG: Label L3

-
- 2** Label both ends of each 24 VDC return (grey) cable with a permanent marker or a wire tag as follows.
- #1/0 AWG: Label L1
 - #1/0 AWG: Label L2
 - #1/0 AWG: Label L3
-
- 3** Layout the DC cables via the ladder rack or cable support frame, from the power cabinet to the DC terminal block on the top of the BTS 8420/AWS 8420 radio cabinet. Refer to the figure below.



G-2 POSITION
4.0B 850 DUAL BAND OR 4.0B PCS AUX GROWTH

-
- 4** Route the ends of the +24 VDC cables to the top of the 3GP24i power cabinet and through the appropriate opening shown in the figure below.
-
- 5** Route the ends of the return cables into the top of the 3GP24i power cabinet through the specified opening shown in the figure below.



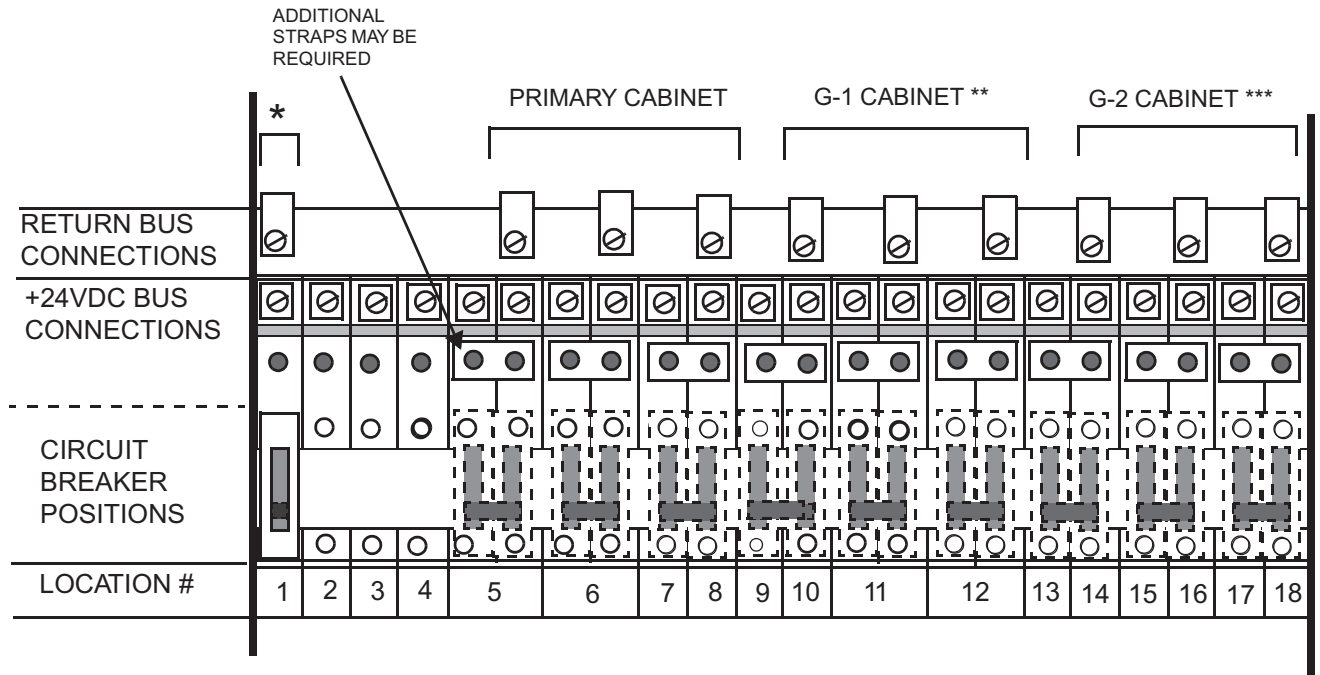
-
- 6** At the power cabinet, strip 19 mm (3/4 inches) of insulation from the end of each of the cables.

END OF STEPS

Connect the BTS 8420/AWS 8420 radio cabinet DC cables at the 3GP24i power cabinet

Perform the following steps to connect the BTS 8420/AWS 8420 radio cabinet DC cables at the 3GP24i power cabinet.

- 1** Refer to the figure in the next step. Using a flat head screwdriver, connect each +24 VDC (red) cable to the appropriate terminal on the DC distribution panel, as follows:
- L1 (#1/0 AWG) to position 5
 - L2 (#1/0 AWG) to position 6
 - L3 (#1/0 AWG) to position 7/8
- Torque each connection to 6 Nm (53 in-lb).
-
- 2** Locate the return terminals on the return (upper) bus, shown in the figure below. Each terminal is situated directly above and behind the corresponding +24 VDC (red) cable, which was attached in the previous step.



* POWER CABINET CONTROLLER CONNECTION AND CIRCUIT BREAKER: INSTALLED AT FACTORY

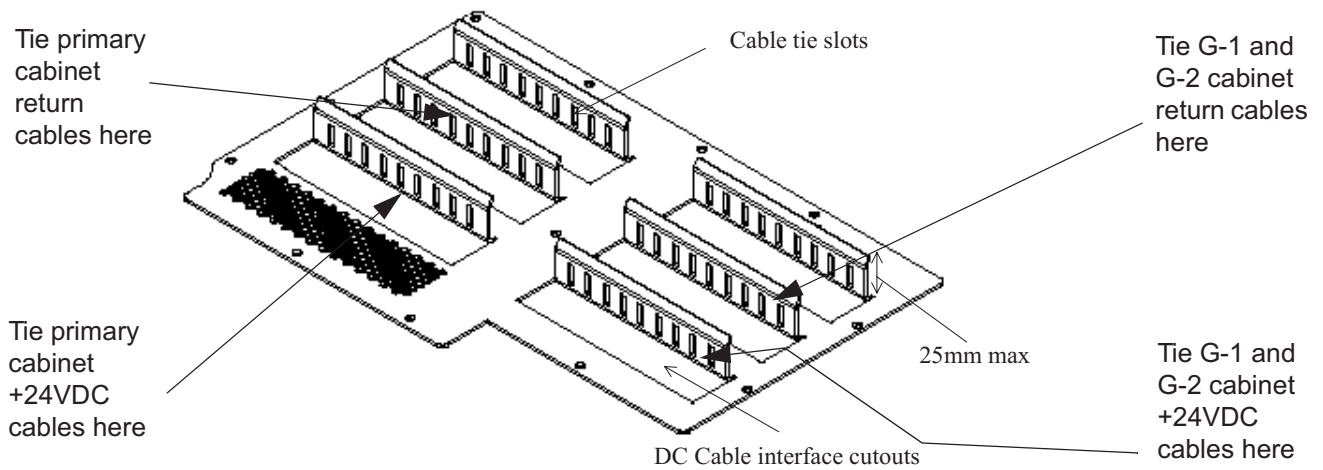
** G-1 = PCS DUAL BAND OR PCS AUX

** G-2 = PCS AUX OR 850 DUAL BAND

- Using a flat head screwdriver, connect each of the three return (grey) cables to the appropriate terminal on the return (upper) bus, directly above and behind each corresponding +24 VDC (red) cable. Torque each connection to 6 Nm (53 in-lb). *Note that this figure is only an example.*



- 4 Attach the DC cables to the applicable cable tie slot on the top of the 3GP24i power cabinet with lacing cord or wire ties. Refer to the figure below.



END OF STEPS

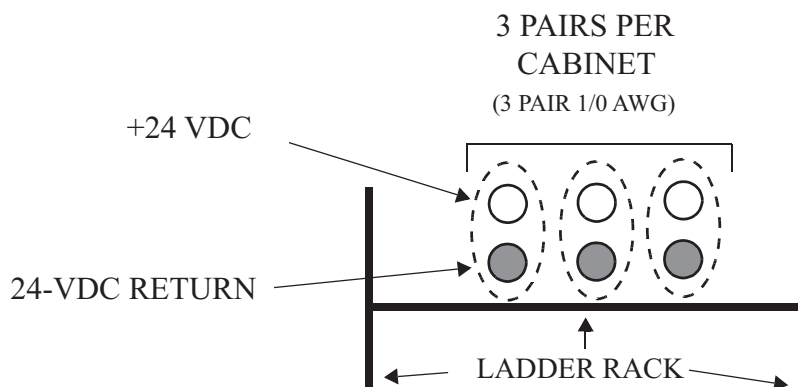
Connect the DC power cables to the BTS 8420/AWS 8420 radio cabinet

Use the following procedure to connect the DC power cables to the BTS 8420/AWS 8420 radio cabinet.

- 1 Route all DC power cables from the 3GP24i power cabinet, via the ladder rack, or cable support frame, to the DC terminal block on the top of the BTS 8420/AWS 8420 radio cabinet.



- 2 Route and secure the cables to the ladder rack, as shown in the figure below (preferred). Attach the cables to the ladder rack or cable support frame using standard procedures, including the use of cable ties or lacing cord. Refer to the figure below.



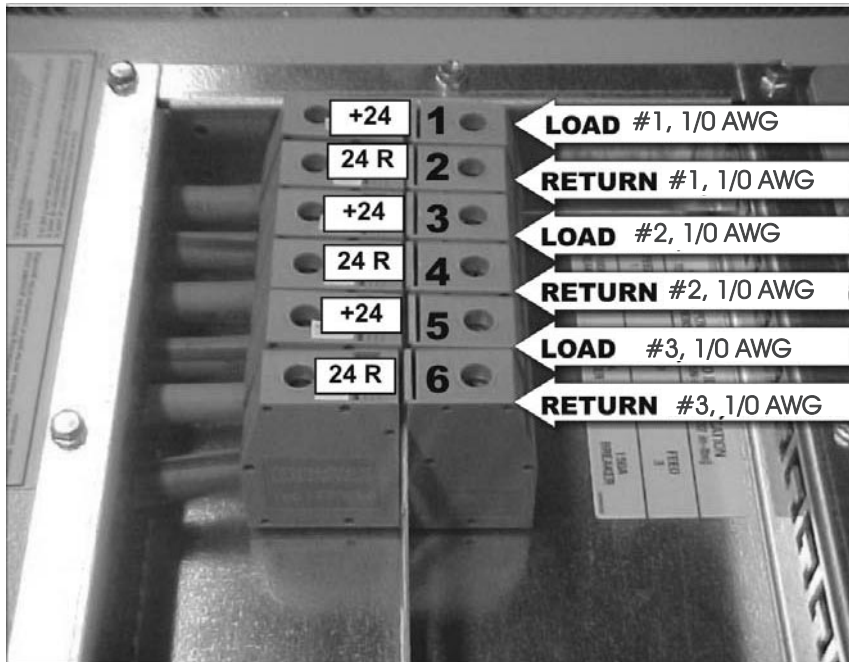
Important! When performing the next step, the cable markings (or wire tags) may be cut off when the excess cable is removed. Re-mark or tag each cable immediately after cutting.

-
- 3 Cut each cable to the correct length (allow adequate slack).

Important! If not installing a BTS 8420/AWS 8420 radio cabinet, skip the next step.

- 4 At the BTS 8420/AWS 8420 radio cabinet, strip 1 inch (25 mm) of insulation from each feed and return cable and connect it to the appropriate terminal on the DC terminal block. Torque each connection to 6 Nm (53 in-lb). Connect the red DC cables (+24 VDC) and the DC return cables (24 VDC return) to the DC power terminal block as follows:

- L1 #1/0 AWG RED (+24 VDC) to position 1
- L1 #1/0 AWG GREY (24 VDC Return) to position 2
- L2 #1/0 AWG RED (+24 VDC) to position 3
- L2 #1/0 AWG GREY (24 VDC Return) to position 4
- L3 #1/0 AWG RED (+24 VDC) to position 5
- L3 #1/0 AWG GREY (24 VDC Return) to position 6.



4.0B 850 OR 4.0B PCS PRIMARY CABINET

END OF STEPS



How to install the AC utility power cables

Overview

Important! If installing the BTS 8420 radio cabinet, the AC utility cables have already been connected to the 3GP24i power cabinet at the time of the installation of the primary cabinet. In this case, if also installing a battery module, skip to “How to install the first EZBFi battery base module” in the *EZBFi Modular Battery Installation Manual for +24V and -48V*, 401-703-507. Otherwise, skip to Chapter 6 to continue the installation. If utilizing non-Alcatel-Lucent power, skip to Appendix A.

This procedure module provides instructions for the connection of the AC utility power cable to the 3GP24i power cabinet. Since this procedure may be performed by a licensed electrician (depending upon local regulations), these steps are supplied for reference only.

Important! If the AC utility connections are to be performed by a licensed electrician, this activity must be coordinated with the work of the 3GP24i power cabinet installers in order to avoid unnecessary delays.

Step-by-step instructions are provided for the following tasks:

“Connect the 1.5 inch AC conduit at the top of the 3GP24i power cabinet” (p. A-22)

“Route and connect the AC wires in the 3GP24i power cabinet” (p. A-24)

Before you begin

The AC cable should be installed from the service panel to the area of the power cabinet as part of site preparation. If this has not been done, contact your supervisor and the customer contact.

Verify that the circuit breakers for the AC feeder wires are off, locked out, and tagged.

Verify that the GPS antenna, power cabinet, primary cabinet, and associated equipment have been properly grounded.

Safety precautions

Observe the following safety precautions



Electrical Energy Hazard

Electrical circuits can become energized, resulting in an electrical shock hazard.

Follow these rules:

- 1. Ensure that the circuit breaker for each AC input is turned OFF and tagged out.*
- 2. Follow the procedures in the order provided. Always install earth ground connection before connecting AC power to the 3GP24i power cabinet.*

CAUTION

Equipment Damage / Inspection Failure

Damage to equipment, safety hazards, or failure to pass inspection can occur if all applicable codes and regulations are not followed.

Follow all local codes and practices when performing the steps to connect AC to the 3GP24i power cabinet.

Description of AC utility power connections

The 3GP24i power cabinet is equipped with one standard rectifier shelf. An optional second rectifier shelf may be added. Each shelf can support up to four rectifiers. The 3GP24i power cabinet accepts a 1-1/2 inch conduit (flexible or rigid per local code) for the AC power supply wires. The AC wires enter through the top of the 3GP24i cabinet. [Refer to the figure](#) The 3GP24i power cabinet is equipped with an AC terminal block at the top interior left side of the cabinet for connecting the AC wires to power up to eight rectifiers in the cabinet. [Refer to the figure](#). The AC wires are connected as shown in [the figure](#). The customer provides the AC service and the conduit as part of site preparation.

Before you begin

The AC cable should be installed from the service panel to the area of the power cabinet as part of site preparation. If this has not been done, contact your supervisor and the customer contact.

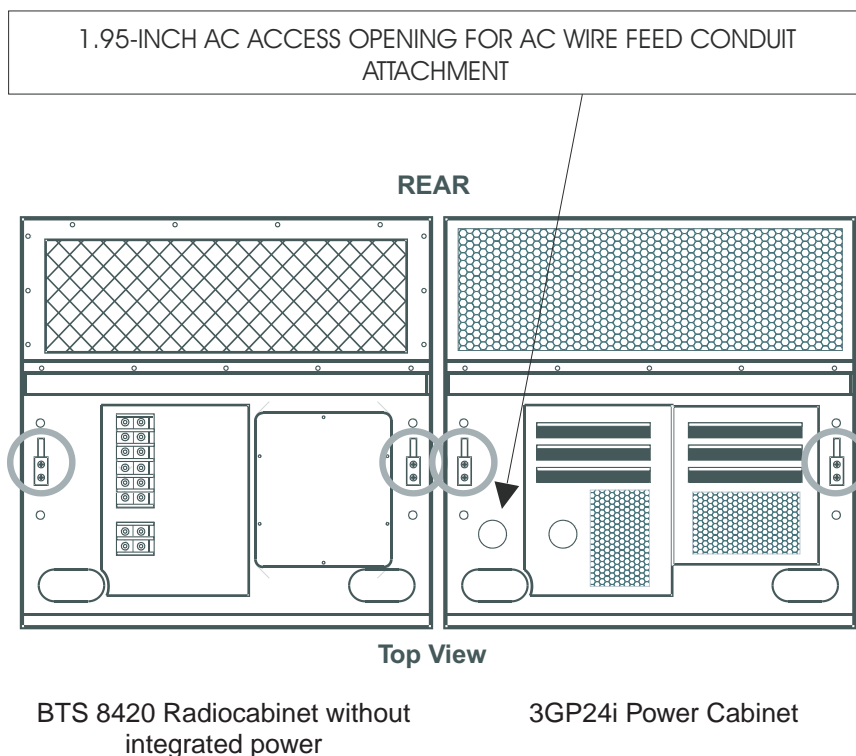
Verify that the circuit breakers for the AC feeder wires are off, locked out, and tagged.

Verify that the GPS antenna, power cabinet, primary cabinet, and associated equipment have been properly grounded.

Connect the 1.5 inch AC conduit at the top of the 3GP24i power cabinet

Use the following procedure to connect the 1.5 inch AC conduit at the top of the cabinet.

- 1 Locate the AC access opening on the top of the 3GP24i power cabinet. Refer to the figure below. The circles represent the attachment location of the cabinet ground cables, which were attached in Chapter 4.
- 2 Locate the AC conduit, which is provided by the customer.
- 3 Verify that the main panel breaker(s) that supply AC power are OFF.
- 4 Thread the AC wires through the conduit and into the top of the power cabinet through the access opening. Refer to the figure below.
- 5 Attach the AC cable conduit to the top of the power cabinet at the access opening. Refer to the figure below.

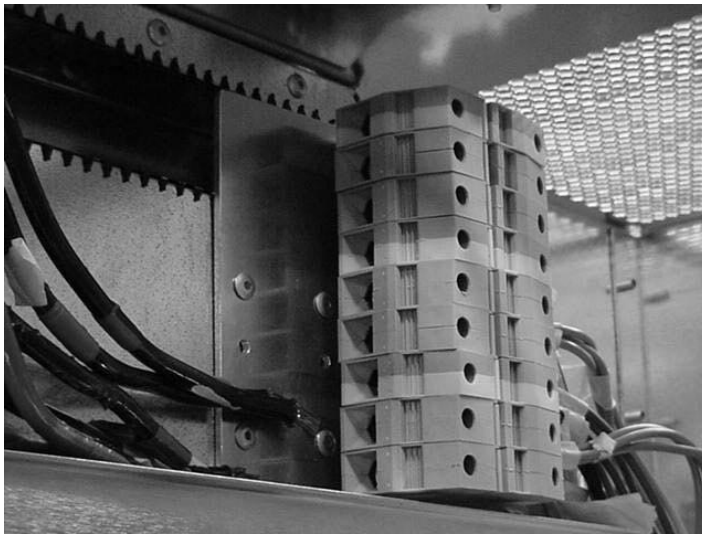


END OF STEPS

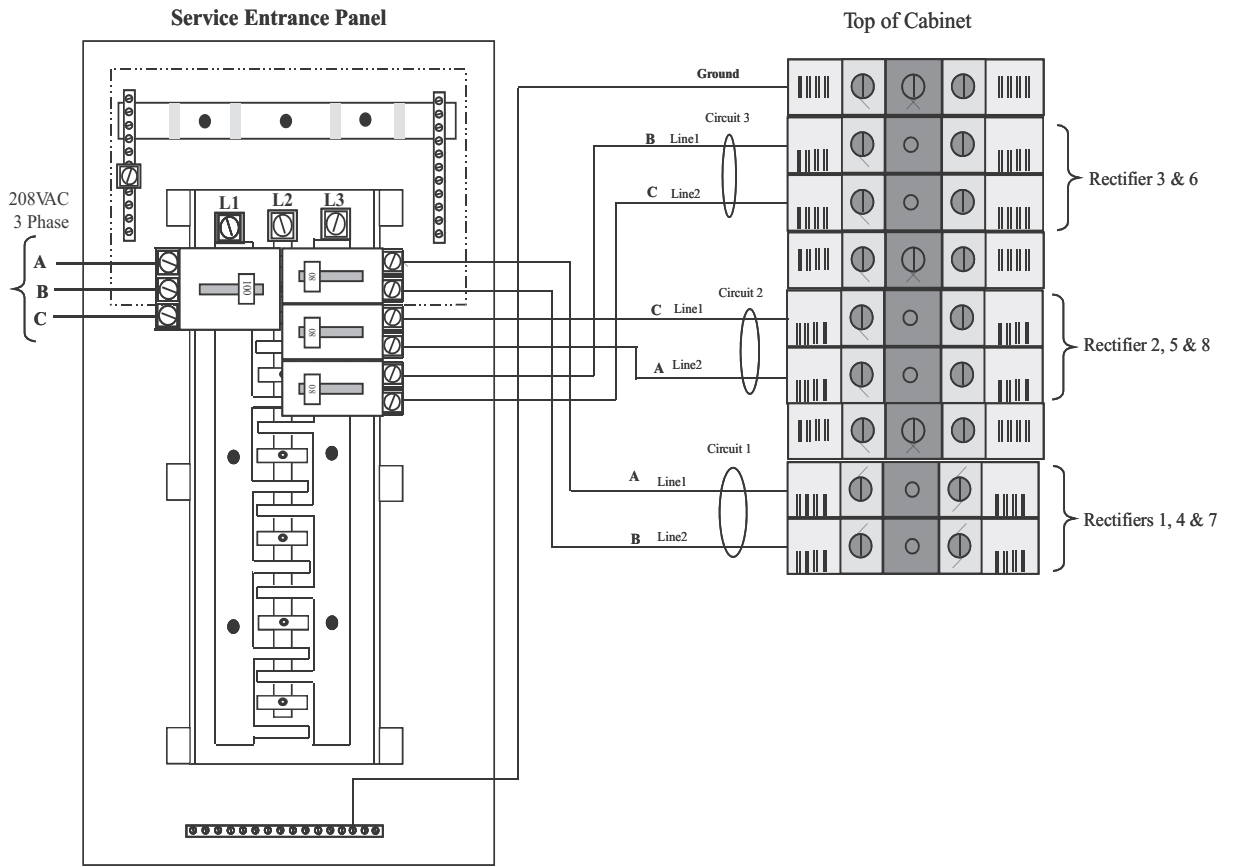
Route and connect the AC wires in the 3GP24i power cabinet

Use the following procedure to route and connect the AC wires in the power cabinet.

- 1 Verify that the main panel breaker(s) that supply AC power are OFF.
- 2 Clearly label (tag out) the circuit breaker panel, stating that installers are working on the AC cabling.
- 3 Remove the plastic cover protecting AC terminal block by loosening two screws, then lifting cover away from inner frame. [Refer to the figure](#)
- 4 Route the six (three pairs) of AC wires and the grounding wire from the access opening, inside the top of the 3GP24i power cabinet, to the AC terminal block. Refer to the figure below.




- 5 Position the AC wires at the AC terminal block and cut them to length.
- 6 Strip approximately 19 mm (3/4 inches) of insulation from the end of each wire.
- 7 Observe the AC wiring diagram below.



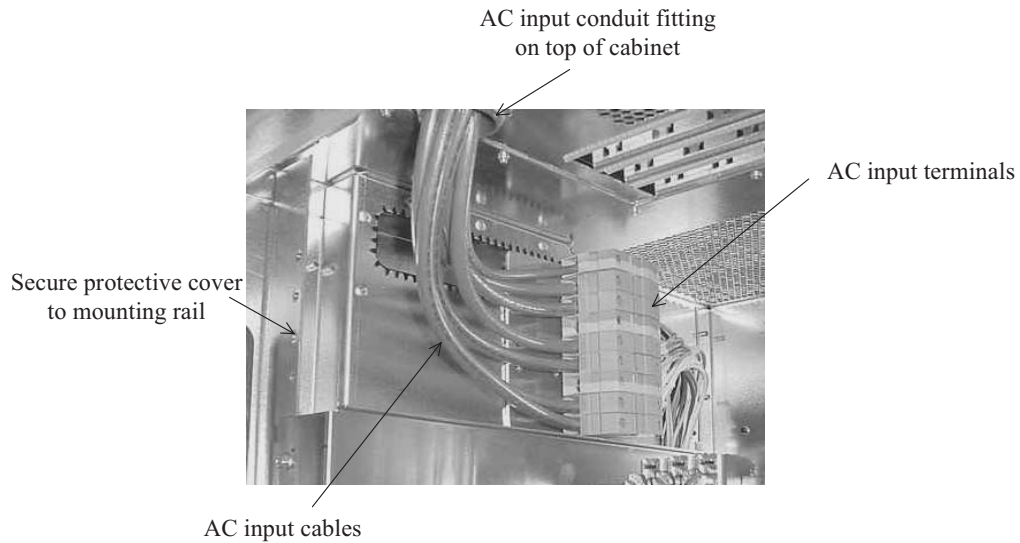
- 8 Connect the AC wires as shown in [the figure](#) and the table below.

The location, color, function, and size of each wire in the AC input cable in a single phase configuration is shown in the table below.

| Location | Color | Function | Wire size |
|---|--------------|----------|-----------|
| Top | Green/Yellow | Ground | 6 AWG |
|  | Red/Black | Line2 | 4 AWG |
| | Red/Black | Line 1 | 4 AWG |
| | * | | |
| | Red/Black | Line2 | 4 AWG |
| | Red/Black | Line 1 | 4 AWG |
| | * | | |
| | Red/Black | Line2 | 4 AWG |
| Bottom | Red/Black | Line 1 | 4 AWG |

* No connection

- 9 Insert each wire into the appropriate terminal. Then, torque each terminal to 4 Nm (35 in-lb.). Refer to the completed connection below.



- 10 Install the plastic cover and secure to cabinet inner frame using two screws. Refer to the figure below.



-
- 11** At the AC main distribution panel, check the label for each breaker. If they are not correct, relabel them corresponding to each circuits.

Important! Do *not* turn on AC power at this time.

END OF STEPS



How to install 3GP24i power cabinet components

Overview

Purpose

Instructions for the installation of rectifiers, circuit breakers, and batteries in the 3GP24i power cabinet are provided here.

Contents

| | |
|--|----------------------|
| How to install the rectifiers in the 3GP24i power cabinet | A-29 |
| How to install the DC circuit breakers in the 3GP24i power cabinet | A-32 |
| Prepare to install batteries in the 3GP24i power cabinet | A-35 |
| How to install batteries in the 3GP24i power cabinet | A-40 |



How to install the rectifiers in the 3GP24i power cabinet

Overview

This procedure module provides information and instructions for the installation of the rectifiers.

This section contains the following information and instructions.

[“Description of rectifiers and shelves” \(p. A-29\)](#)

[“Install the rectifiers” \(p. A-30\)](#)

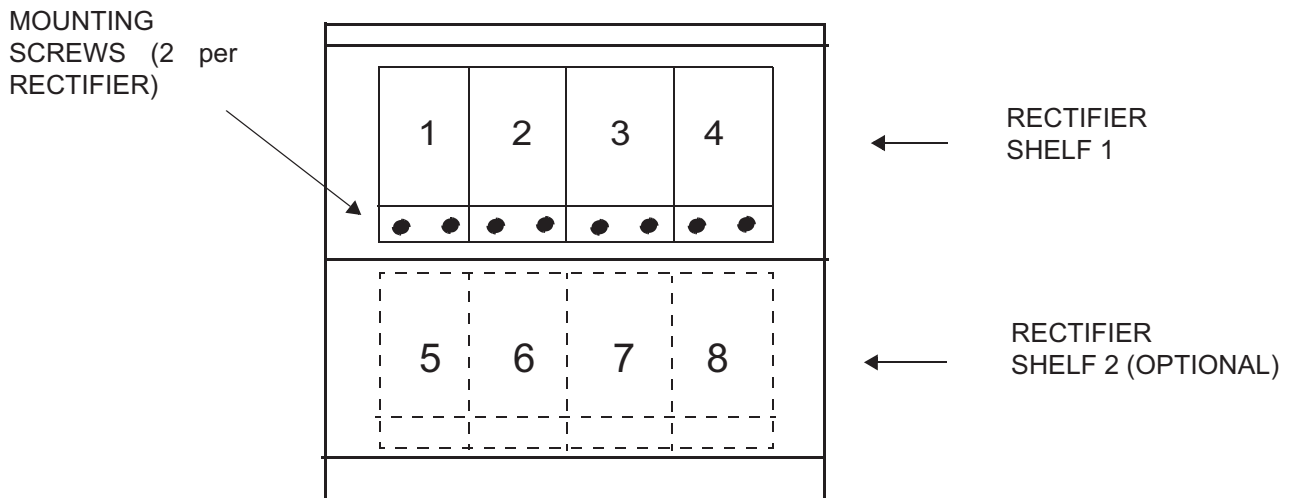
Description of rectifiers and shelves

The rectifiers are shipped separately from the 3GP24i power cabinet for installation at the site. Each rectifier is keyed to prevent installation of the wrong type of rectifier.

The 3GP24i power cabinet is equipped with one rectifier shelf. An optional second rectifier shelf can be added. Each shelf can support up to four KS24637 rectifiers, but must be installed in the order shown in the figure below

The 3GP24i power cabinet may be equipped with two rectifier shelves, which support up to four rectifiers each. The rectifiers must be installed in the order shown in the figure below

Note that the fifth rectifier requires the second rectifier shelf option



Preventing Equipment damage

CAUTION

Electrostatically Sensitive Components!

Semiconductor elements can be damaged by static discharges.

The following rules must be complied with when handling any module containing semiconductor components:

- *Wear conductive or antistatic working clothes (e.g., coat made of 100% cotton).*
- *Wear grounded ESD wrist strap.*
- *Wear shoes with conductive soles on a conductive floor surface or conductive work mat.*
- *Leave the modules in their original packaging until ready for use.*
- *Make sure there is no difference in potential between yourself, the workplace, and the package before removing, unpacking, or packing a module.*
- *Hold the module only by the grip without touching the connection pins, tracks, or components.*
- *Place modules removed from the equipment on a conductive surface.*
- *Test or handle the module only with grounded tools on grounded equipment.*
- *Handle defective modules exactly like new ones to avoid causing further damage.*

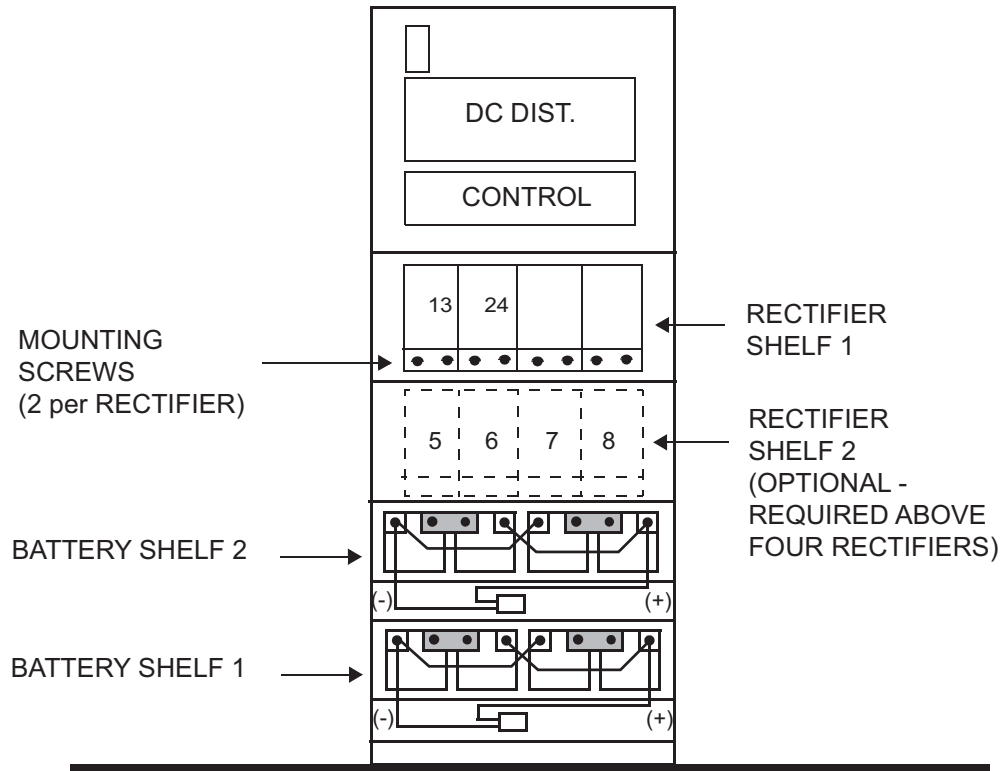
Install the rectifiers

Use the following procedure to install the rectifiers.

- 1 Obtain the required rectifiers. Obtain the required rectifiers. Rectifier information (the required number for various loads) can be obtained from the ERD (ERD_0102_0004__PWR). The ERD can be accessed from the Customer Information Center at <http://www.cic.lucent.com>.

Important! Install rectifiers from left to right on the top shelf (Shelf 1). Shelf 1 should be populated with four rectifiers before adding Shelf 2. Refer to the figure below.

- 2 Install each rectifier on the appropriate shelf, and in the correct position. Refer to the figure below.



- 3 Slide the rectifier inward until it stops. Secure with the two mounting screws at the bottom.
- 4 Skip to [“How to install the DC circuit breakers in the 3GP24i power cabinet”](#) (p. A-32) to continue the installation.

END OF STEPS



How to install the DC circuit breakers in the 3GP24i power cabinet

Overview

This procedure module provides instructions for the installation of the DC circuit breakers.

Before you begin

Here is some useful work preparation information.

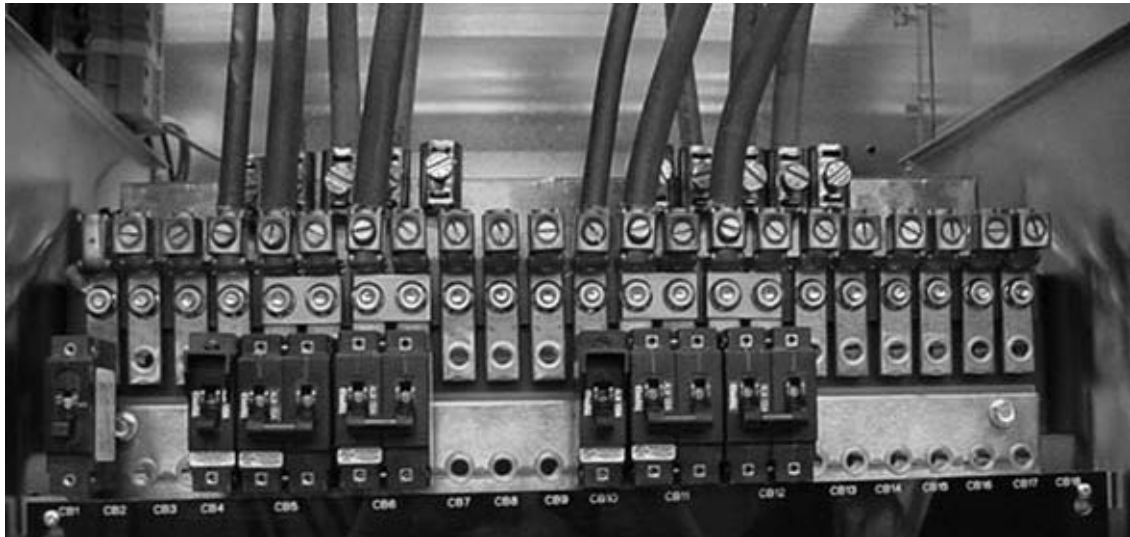
Parts and/or kits needed

The following circuit breakers are required for the installation of the BTS 8420 radio cabinet. These circuit breakers are installed on the DC distribution panel.

Step-by-step instructions are provided for the following tasks:

| CELL TYPE | CIRCUIT BREAKER TYPE | CIRCUIT BREAKER QUANTITY |
|-----------|----------------------|--------------------------|
| BTS 8420 | LMLK DC (150-A) | 3 |

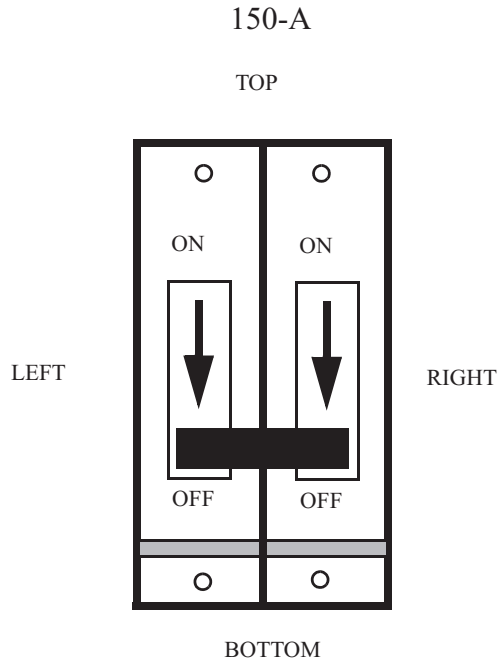
These breakers will be installed into the DC distribution panel, as shown in the example figure below. *Note that this figure is only an example.*



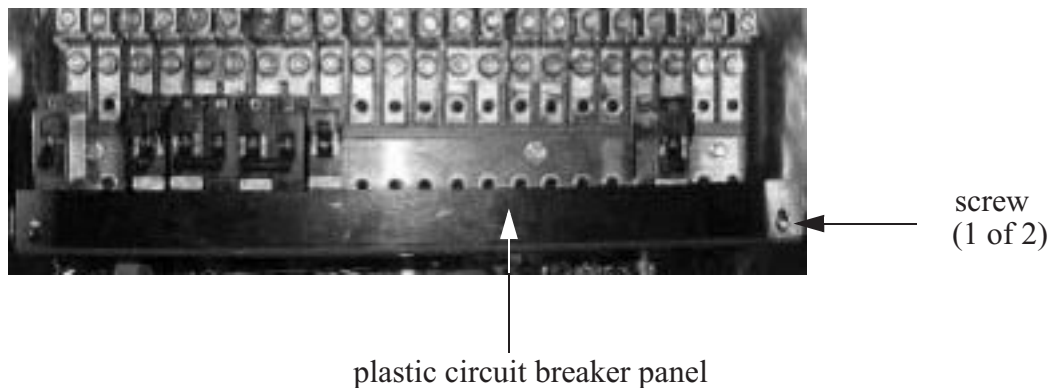
Install DC circuit breakers in the 3GP24i power cabinet

Use the following procedure to install the DC circuit breakers in the 3GP24i power cabinet.

- 1 Turn all breakers that are being installed to the OFF position. See the figure below.

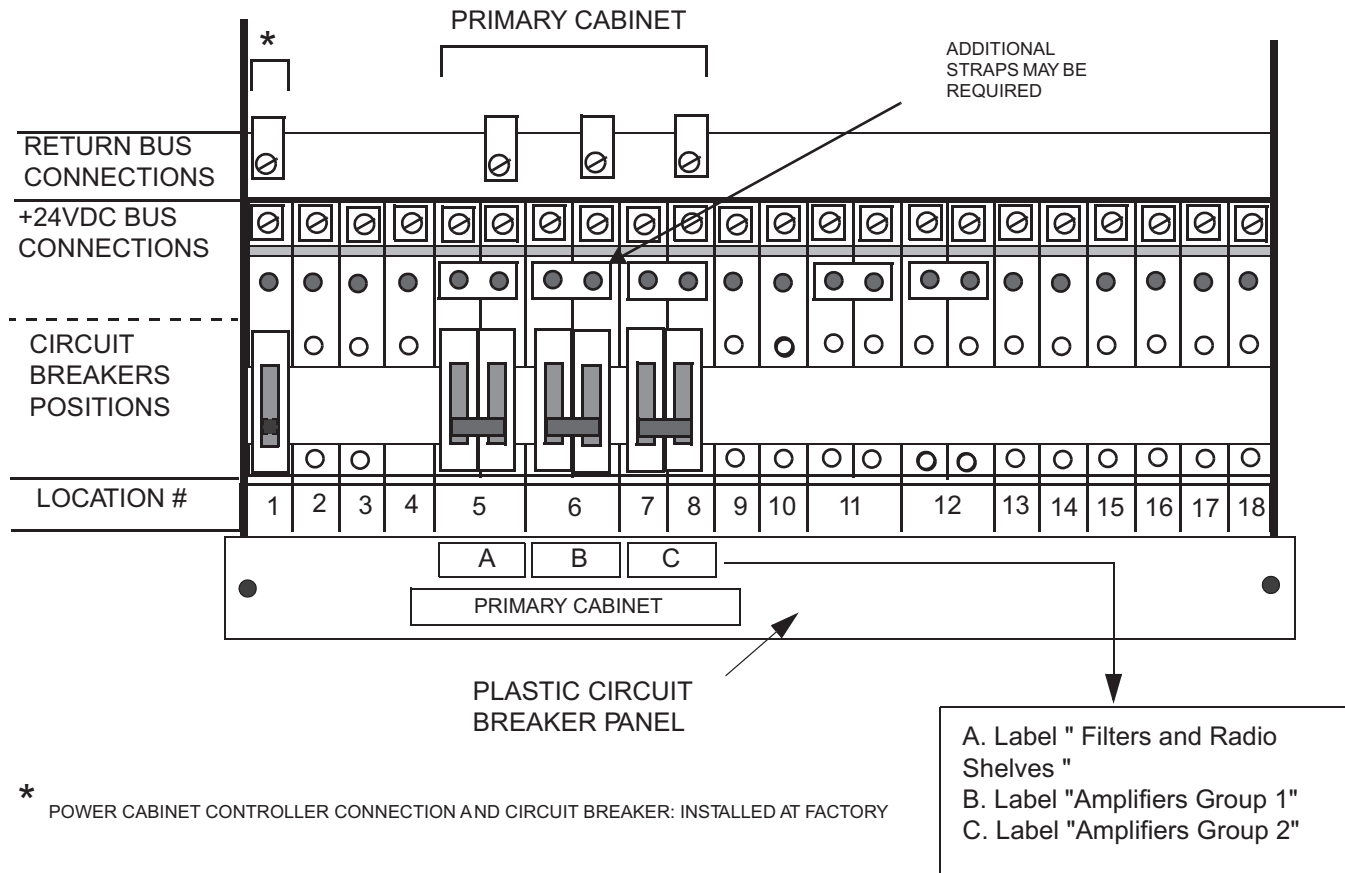


- 2 Remove the plastic circuit breaker bar by loosening the two screws and the lifting bar up and out as shown in the *example* figure below.



Important! If installing circuit breakers for a cabinet in addition to the primary cabinet, skip the next step.

- 3 Plug the breakers into the following positions on the DC distribution panel. See the figure below.
- 150-A (two-position) into position 5
 - 150-A (two-position) into position 6
 - 150-A (two-position) into position 7/8.



- 4 Replace the plastic circuit breaker panel, and complete and attach the supplied circuit breaker labels to the front. Label as shown in the figure above.

Important! If installing circuit breakers for a cabinet in the G-2 position (third cabinet), skip the next step.

END OF STEPS



Prepare to install batteries in the 3GP24i power cabinet

Perform the following steps in preparation for installation of the batteries in the 3GP24i power cabinet.

“Battery safety and precautions” (p. A-35)

“Description of battery compartment” (p. A-36)

“Description of typical batteries” (p. A-37)

Battery safety and precautions

Your understanding of the following information is important to ensure a proper and safe installation of the batteries.

CAUTION

To batteries in this product can present a risk of high short circuit and fire. The following precautions should be observed when working on batteries:

- *Remove watches, rings, or other metal objects*
- *Use insulated tools*
- *Wear rubber gloves and boots*
- *Disconnect charging source prior to connecting or disconnecting battery terminals*



DANGER

Injury to Personnel - Chemical Burns


The batteries contain electrolyte (sulfuric acid and water), which can generate hydrogen gas, even under open circuit conditions. Extreme caution must be taken when handling batteries. Carefully follow all applicable procedures.




WARNING

Injury to Personnel

Lifting of the batteries by one person can result in a serious injury. Always use two people (or use a lifting device) to handle the batteries.

**WARNING**
High Energy hazard

The following procedures are the safest method to install and connect the batteries. If these procedures are not followed in the exact sequence listed, a serious electrical energy hazard will result. Ensure that loose cables cannot cause a short circuit. Since the batteries are charged, do not touch battery terminals or cross terminals with metal objects. Do not remove the insulated cover from the battery terminals until you are preparing to complete each connection.

**CAUTION**
To reduce the risk of fire or injury to persons, read and follow these instructions:

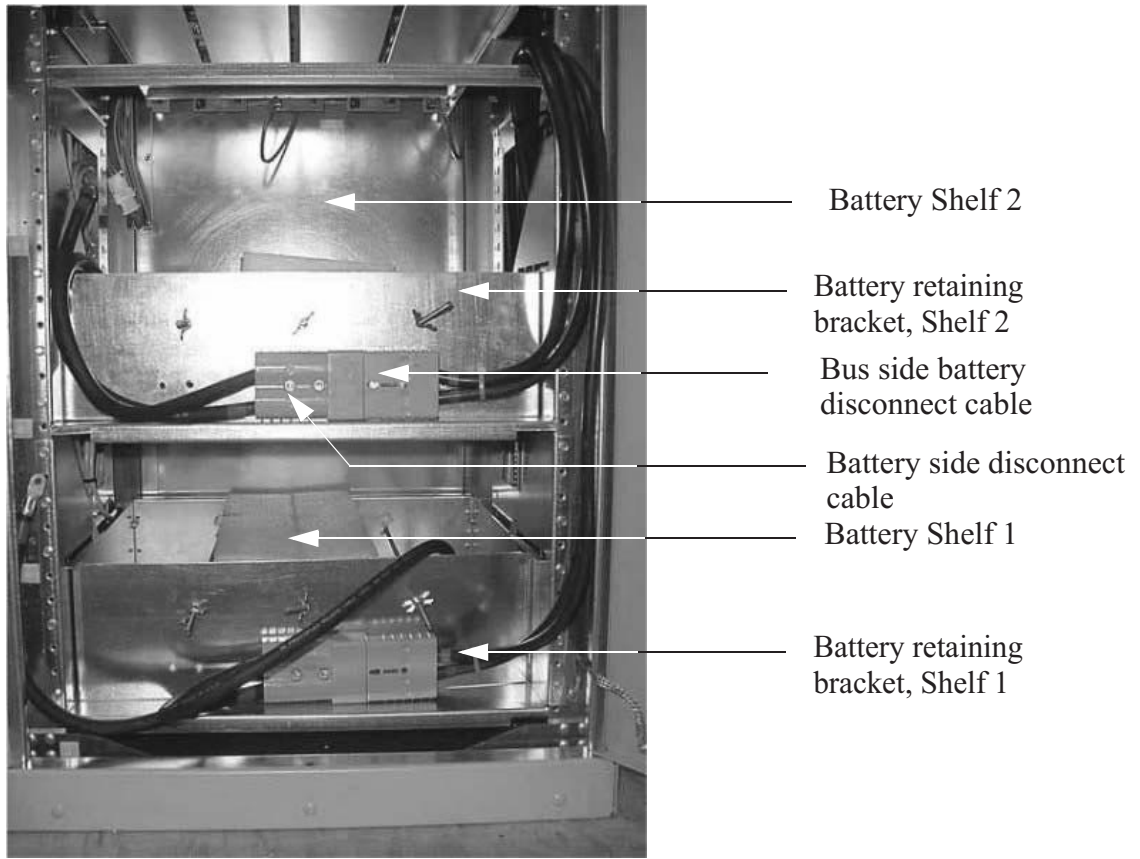
- *Use only batteries approved for use with this product. Refer to “[Approved batteries](#)” (p. A-38) for 3GP24i approved batteries and “[Approved batteries](#)” (p. A-38) for EZBFi approved batteries*
- *Do not dispose of the batteries in a fire. The cell may explode. Check with local codes for possible disposal instructions*
- *Do not open or mutilate the batteries. Released electrolyte is corrosive and may cause damage to the eye and skin. It may be toxic if swallowed*
- *Exercise care in handling batteries in order not to short the battery with conductive materials such as rings, bracelets, and keys. The battery or conductor may overheat and cause burns*
- *Do not mix old and new batteries in this product.*

Description of battery compartment

Two shelves are provided for batteries. The bottom shelf (Shelf 1) is populated first. Each shelf can contain four batteries, for a total of eight batteries. During installation, two 12 V batteries are connected together in a pair to form a 24 V string, two strings per shelf, for a maximum of four strings per cabinet.

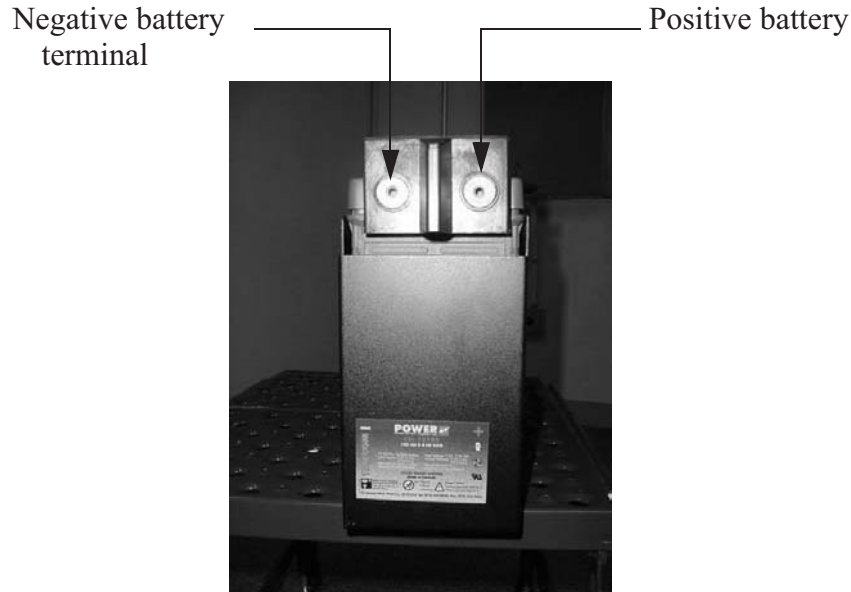
A disconnect connector is provided for each battery shelf. Battery side disconnect cables are pre-installed on the battery retaining bracket on the front of each shelf. The bus side battery disconnect cable assembly (which is not attached to the retaining bracket) is pre-installed from the bus bars and plugs in to the battery side disconnect cable connector on the retaining bracket to form the battery disconnect, as shown in the figure below.

A thermal probe cable is pre-connected and coiled along the cabinet inner wall. Battery heater thermostats are present for each battery shelf.



Description of typical batteries

The L1-type batteries are shown as an example in this manual. The battery terminals are located on the front end of the battery. Positive and negative terminals are clearly labeled "+" and "-". Dual strap handles are permanently attached to the battery along its top. An example Power CLS-12100 L1 battery is shown in the figure below.



Important! An insulated cover is factory-installed over the terminals on the batteries to prevent an inadvertent electrical short during battery installation. Do not remove this cover until you are preparing to complete the battery connection.

Important!

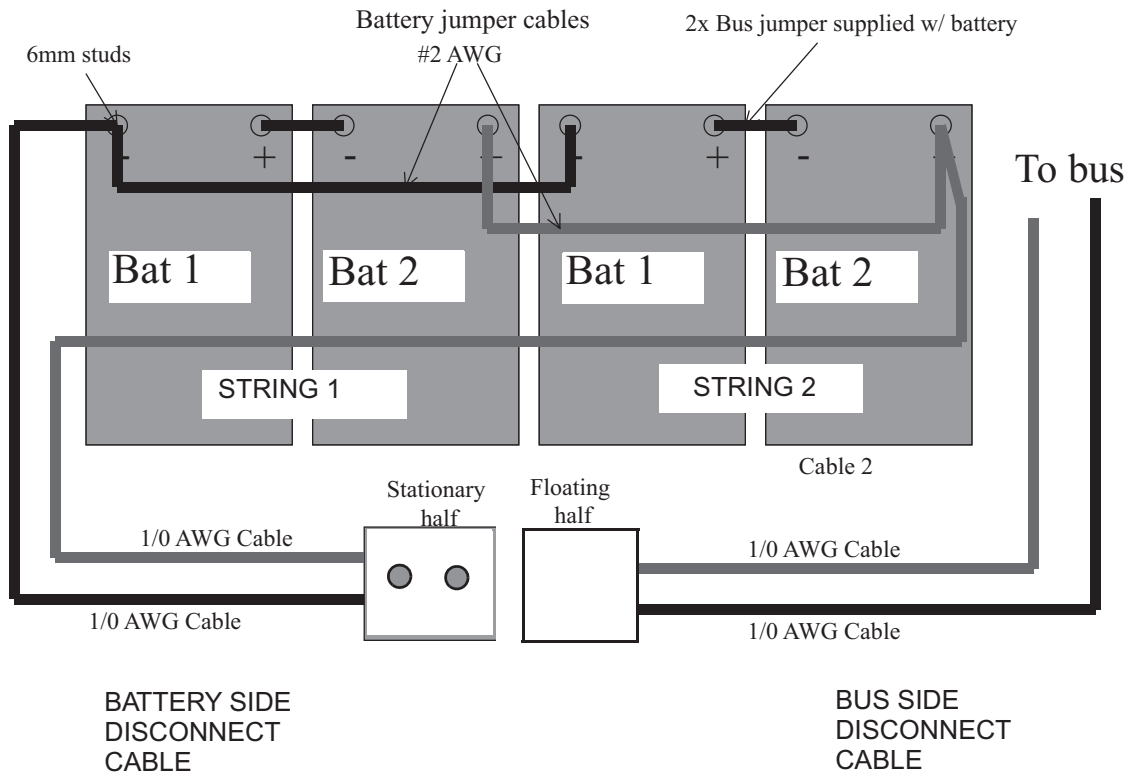
Approved batteries

You will need the following recommended materials or equivalent.

| Qty: | Name |
|------------------------------------|---|
| As required per site specification | Power CSL-12100 L1-type batteries with interconnection bus bars Marathon GNB M12V100FT L1-type batteries with interconnecting bus bars and spacers (One per battery) |

Review the battery cabling plan

Prior to battery installation, refer to the figure below to review the battery cabling plan.



How to install batteries in the 3GP24i power cabinet

Overview

This procedure module provides instructions for the installation and connection of the batteries.

Step-by-step instructions are provided for the following tasks:

| |
|--|
| “Prepare the batteries for installation” (p. A-40) |
| “Review the battery cabling plan” (p. A-38) |
| “Place batteries on a shelf” (p. A-40) |
| “Connect the battery cables to all battery strings” (p. A-43) |
| “Attach interconnecting bus bars to all battery strings” (p. A-45) |
| “Complete the installation of batteries” (p. A-47) |

Prepare the batteries for installation

Follow all appropriate standard practices for the storage and handling of batteries, and complete the warranty procedures and the following steps.

-
- 1 Check battery initial voltages and record.
 - 2 Record all battery date codes.

END OF STEPS

Place batteries on a shelf



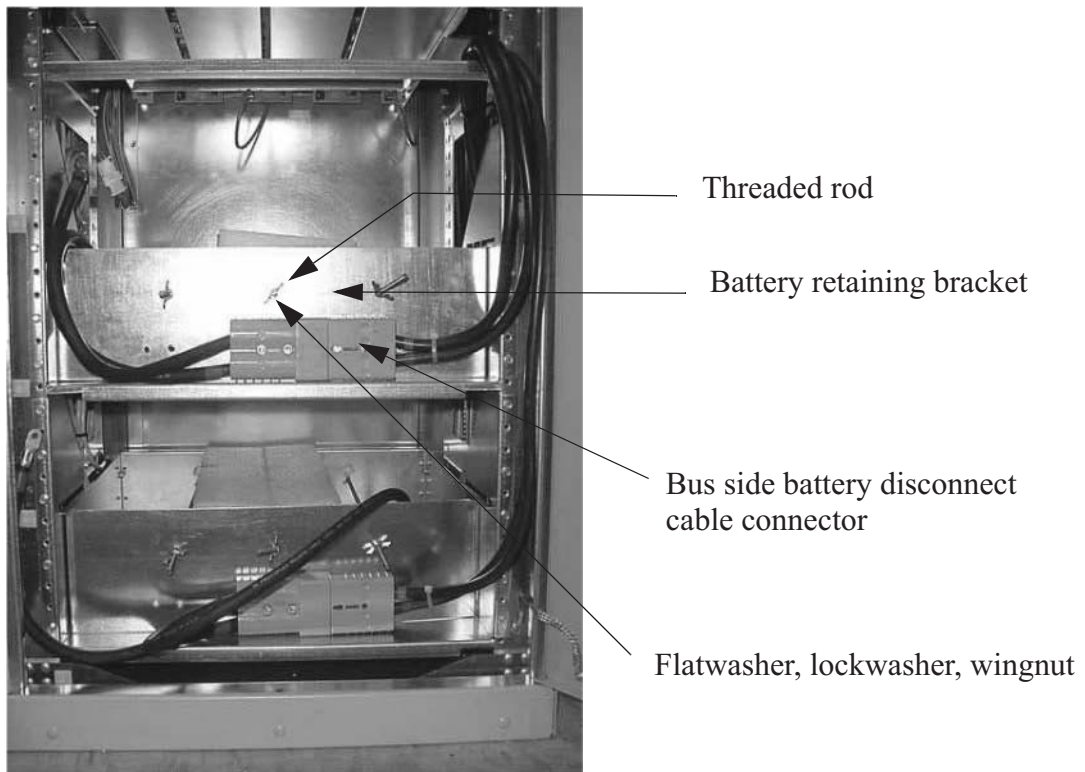
CAUTION

Electrical energy hazard

Battery cable lugs are not insulated and can cause a short circuit or injury. Ensure that loose cables cannot cause a short circuit.

Use the following procedure to place batteries on a shelf, starting with Shelf 1 (bottom).

- 1 If connected, unplug the *bus side* disconnect cable connector from the battery side disconnect cable connector attached to the Shelf 1 (bottom) battery retaining bracket. Refer to the figure below (top shelf identified).

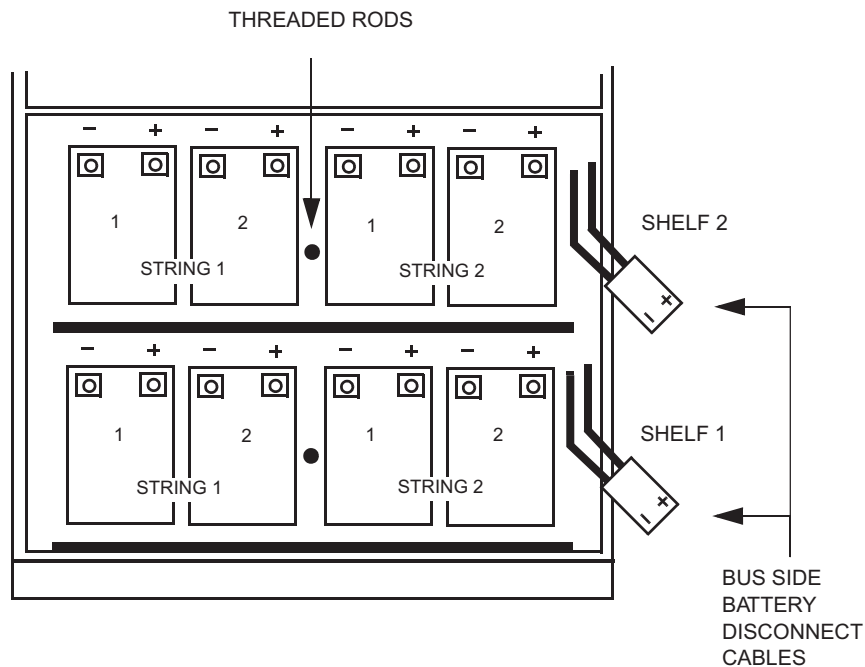


- 2 Remove the wing nut from the threaded rod on the front of the battery retaining bracket and carefully remove bracket and attached battery side disconnect cable assembly from battery shelf. Refer to the figure above and the figure below.

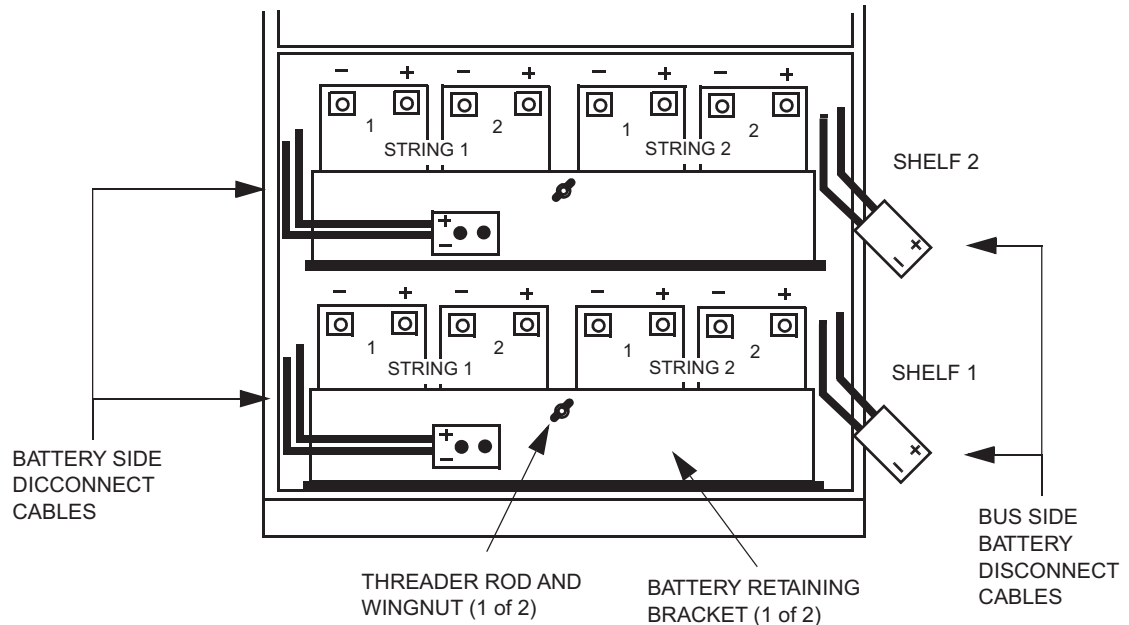
Important! The thermal probe is coiled along left inner frame of the cabinet. Ensure that the probe is up against the inner frame so as to prevent the cable from being pinched during battery installation. Make sure to pull the rear battery handle strap towards the front and away from rear wall. This will prevent the strap from becoming an obstruction during battery placement.

- 3 Ensure that the battery shelf is free of any obstruction that may hinder battery placement.

- 4 Lift and place each battery of the four batteries on the *bottom* battery shelf, with the battery terminals facing the front of the battery compartment. Ensure that the threaded rod is between the two battery pairs, and can be placed in a straight position in preparation for battery retaining bracket reinstallation. Refer to the figure below.



- 5 Place battery retainer bracket at the bottom of each shelf, and pass the threaded rod through the center hole. Secure the threaded rod to the bracket using the flat washer, lock washer, and wing nut, as shown in the figure below.



- 6 Repeat the previous steps for Shelf 2, if required.

END OF STEPS

Connect the battery cables to all battery strings

Perform the following steps to connect the battery cables to all battery strings. *Route all cables downward from their battery connections.*

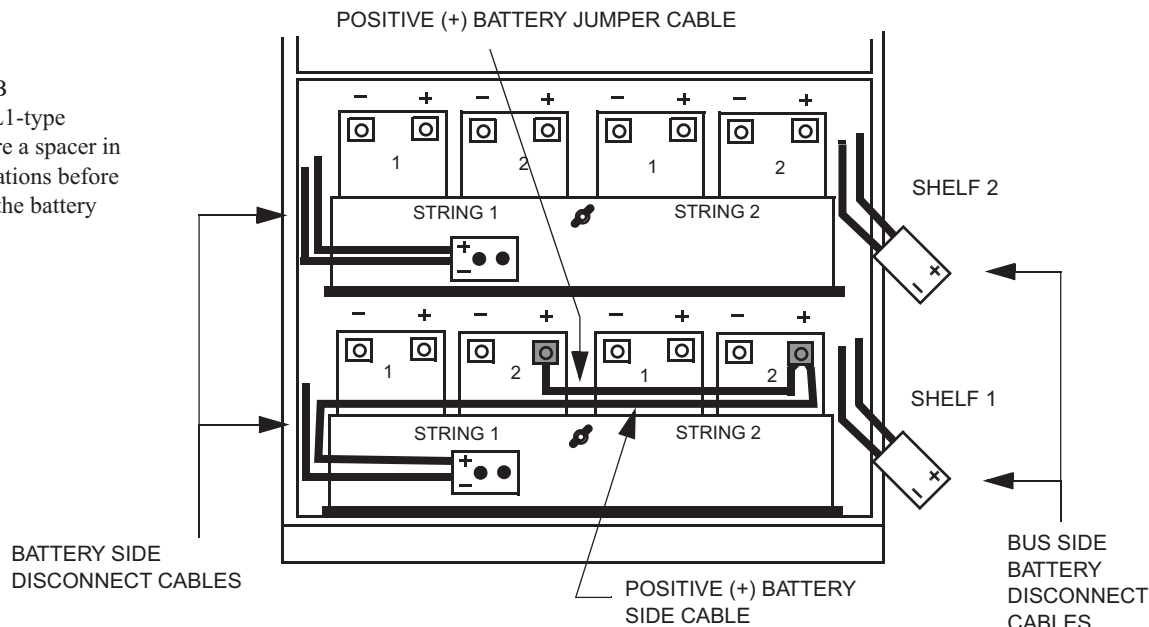
- 1 Remove the attaching hardware from the positive (+) terminals of String 2, Battery 2, and String 1, Battery 2 (shown shaded in the figure below).

Important! If installing *Marathon GNB M12V100FT L1-type batteries* install the supplied spacer before making the battery cable connections in the next three steps.

- 2 Using antioxidant compound, connect the positive (+) battery *jumper* cable to the positive (+) terminal of String 1, Battery 2, using the previously removed attaching hardware. Refer to the figure below.
- 3 Place the other end of the positive (+) battery *jumper* cable on the positive (+) terminal on of String 2, Battery 2. *Do not attach it at this time.* Refer to the figure below.



Marathon GNB M12V100FT L1-type batteries require a spacer in the shaded locations before connection of the battery cable(s).



4 Place the positive (+) *battery side disconnect cable* on the positive (+) terminal of String 2, Battery 2. Attach the two cables using the previously removed attaching hardware.

5 Remove the attaching hardware from the negative (-) terminal of String 2, Battery 1, and String 1, Battery 1 (shown shaded in the figure below).

Important! If installing *Marathon GNB M12V100FT L1-type batteries*, install the supplied spacer before making the battery cable connections in the next three steps.

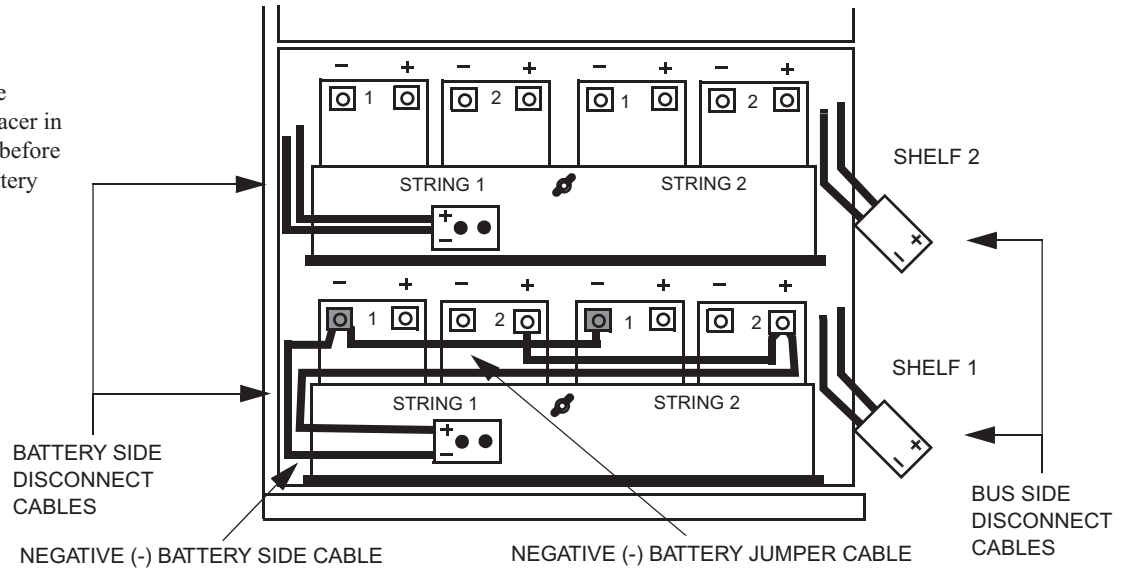
6 Using antioxidant compound, connect the negative (-) *battery jumper cable* to the negative (-) terminal of String 2, Battery 1, using the previously removed attaching hardware.

7 Place the other end of the negative (-) *battery jumper cable* on the negative (-) terminal of String 1, Battery 1. *Do not attach it at this time.*

8 Place the negative (-) *battery side disconnect cable* on the negative (-) terminal on String 1, Battery 1. Attach the two cables using the previously removed attaching hardware. Refer to the figure below.



Marathon GNB M12V100FT L1-type batteries require a spacer in the shaded locations before connection of the battery cable(s).



- 9 Torque all battery connections using the torque value provided on the battery label. Do not use the torque specifications provided in Chapter 3. Then, repeat Steps 1 through 9 for the remaining battery shelf, if applicable.

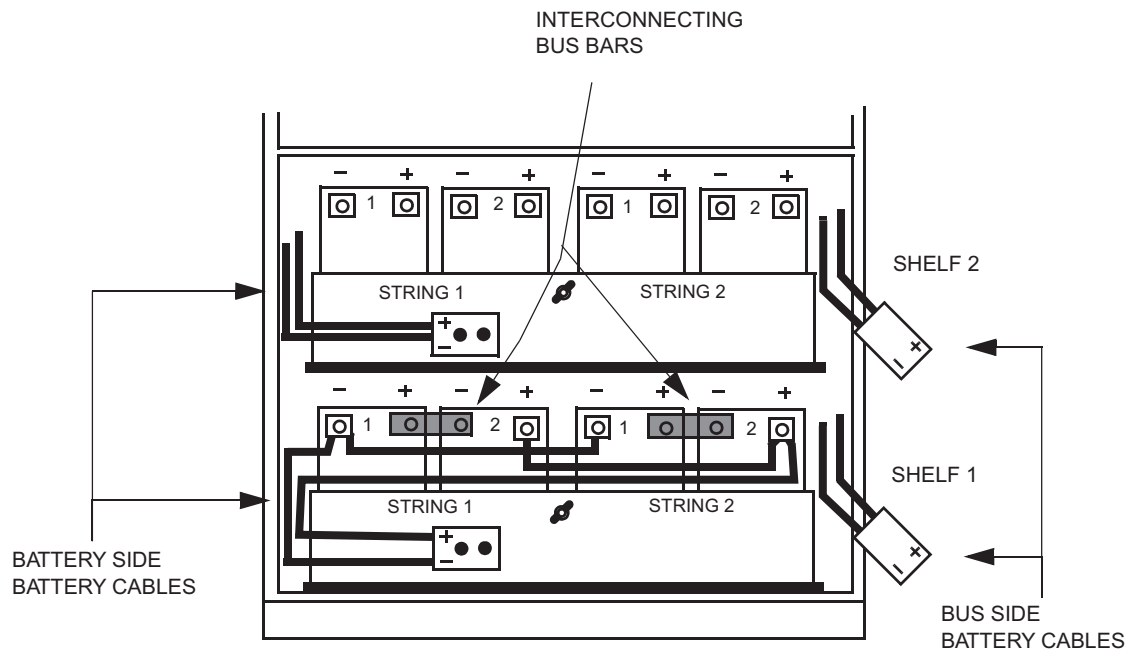
END OF STEPS

Attach interconnecting bus bars to all battery strings

Perform the following steps to connect the interconnecting bus bars to all battery strings.

- 1 Starting with String 2 on the right side of Shelf 1, remove the attaching hardware from the positive (+) terminal of Battery 1 and the negative (-) terminal of Battery 2. Refer to the figure.
- 2 Remove the interconnecting bus bar from the kit that is provided with each pair of batteries and polish the bus bar.
- 3 Apply antioxidant compound to the interconnecting bus bar.
- 4 Apply antioxidant compound to the positive (+) terminal of Battery 1 and the negative (-) terminal of Battery 2 of String 2.

-
- 5 On String 2, place the interconnecting bus bar between the positive terminal of the left-hand battery (#1) and the negative terminal of the right-hand battery (#2).
-
- 6 Connect the interconnecting bus bar using the previously removed attaching hardware. Refer to the figure below.



-
- 7 Torque all battery connections using the torque value provided on the battery label. Do not use the torque specifications provided in Chapter 3.
-
- 8 Repeat Steps 1 through 7 for the remaining battery strings.

.....

END OF STEPS

.....

Complete the installation of batteries

CAUTION

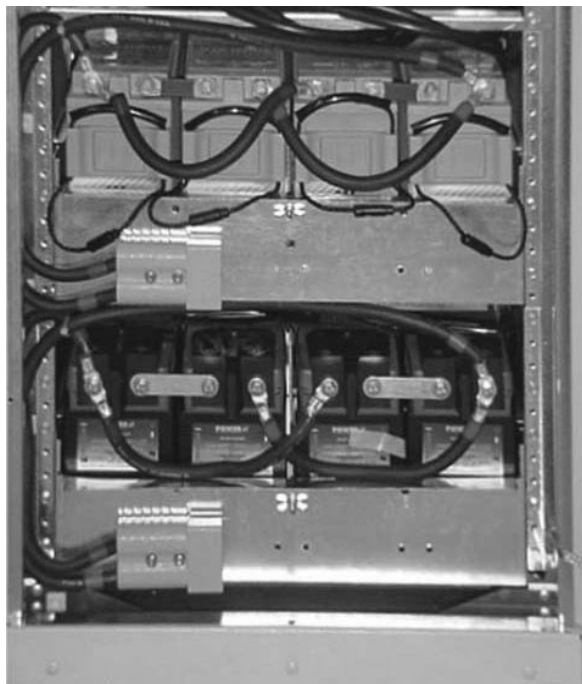
Polarity hazard

When completing the installation of the batteries, carefully check the completed wiring against the wiring diagram on the following page to prevent an electrical hazard.

Use the following procedure to complete the installation of batteries.

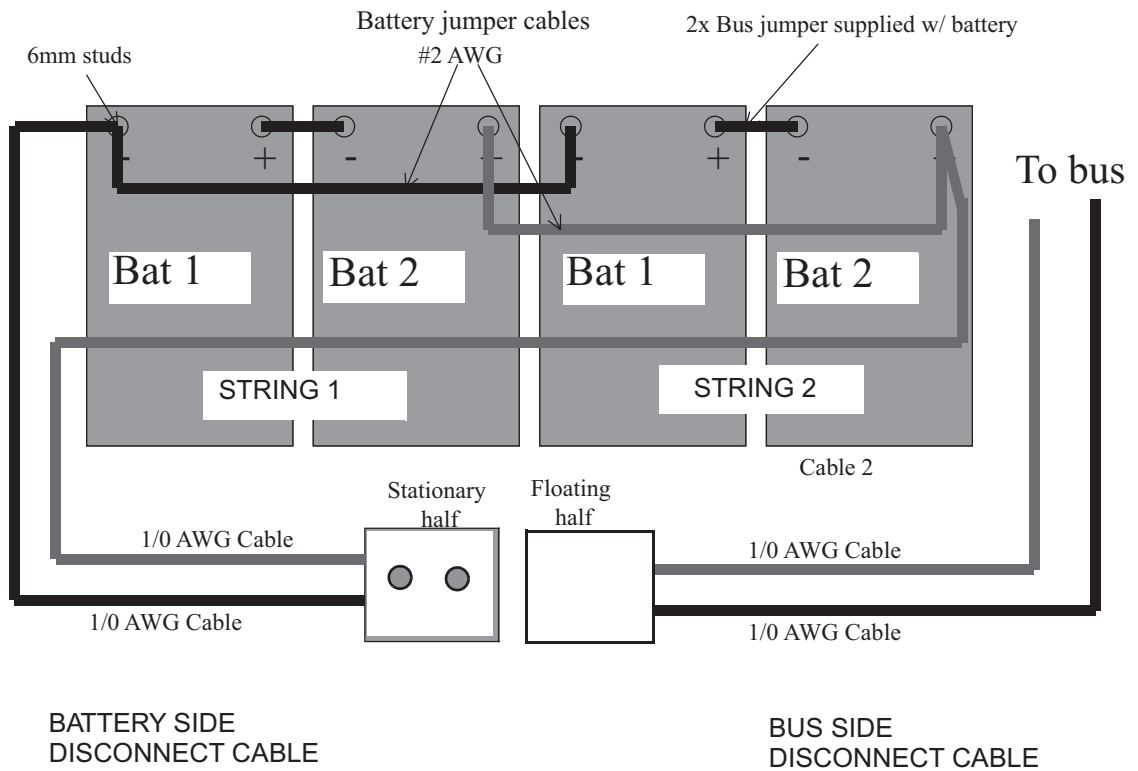
- 1** **Important!** Do not connect the bus side battery disconnect cable connector until the wiring has been checked and AC power has been applied to the power cabinet.

Dress and tie-wrap any remaining loose cables.



Important! The figure above shows the battery cabling plan. The battery string pairs are connected in series; the positive (+) terminal of the left-hand battery is connected to the negative (-) terminal on the adjacent right-hand battery. The two strings are connected in parallel via the negative and positive battery jumper cables.

- 2** Check the completed installation against the wiring diagram below.



END OF STEPS



Appendix B: Post-installation checklist by cabinet and frame

Overview

Purpose

The following post-installation checklists may be used by all installers to record completion of individual installation requirements. To use the checklists, make a copy of each page, as applicable, for each installation. Chapter or other document references are given in the event that a particular requirement needs review. Note that the checklists are followed by an “Installation Punchlist Sheet.” For instructions on how to use the checklists and the Installation Punchlist Sheet, refer to [“Instructions for use of the checklists and punchlist”](#) (p. B-2) .

Contents

| | |
|--|-----|
| Instructions for use of the checklists and punchlist | B-2 |
| IN1: BTS 8420/AWS 8420 radio cabinet | B-3 |
| IN2: 3GP24i power cabinet | B-5 |
| IN-3: Installation Punchlist Sheet | B-6 |



Instructions for use of the checklists and punchlist

Perform the following steps to use the checklists and punchlist.

1 Make copies of sheets IN-1 through IN-3, as applicable to the specific installation.

2 Fill out the IN-1 and IN-2 sheets, according to the following instructions.

1. For each checklist sheet, fill in the cabinet serial number.
2. For each item, check the “Yes,” “No,” or “N/A” column, as applicable.

Important! Observe that the right-hand column labeled “Ch. Ref.” lists the specific chapter for each installation procedure, and if applicable, “Doc. 401-200-115” for grounding specifications or “Doc. 401-703-443” for site preparation.

3 Make multiple copies of sheet IN-3, as needed.

4 Fill out sheet(s) IN-3, the “Installation Punchlist,” using the “No” column entries from sheets IN-1 and IN-2, and add comments for each.

5 Retain the completed sheets.

END OF STEPS



IN1: BTS 8420/AWS 8420 radio cabinet

Overview

The table below lists the post-installation requirements for the *Flexent*[®] radio cabinets. It also provides columns for indicating compliance or non-compliance (Yes or No), and a column to indicate “not applicable” (N/A). The Chapter Reference (Ch. Ref.) column provides the specific chapter for each installation procedure, and if applicable, “Doc. 401-200-115” for grounding specifications or “Doc. 401-703-443” for site preparation.

BTS 8420 radio cabinet Serial Number: _____

AWS 8420 radio cabinet Serial Number: _____

| | Item/Description | Yes | No | N/A | Ch. Ref. |
|-----|--|-----|----|-----|-----------------------------|
| 1. | Is the cabinet secured to a substructure per earthquake zoning requirements? | | | | 2 |
| 2. | Is the cabinet properly grounded? | | | | 2 |
| 3. | Have all cables been properly installed? | | | | 3/4 |
| 4. | Are all covers and screws tightened? | | | | 2-7 |
| 5. | Are all RF cable connections torqued to the appropriate value? | | | | 3/7 |
| 6. | Are all DC cable connections torqued to the appropriate value? | | | | 4/5 |
| 7. | Have all external alarms been connected to the punchdown block? | | | | 3 |
| 8. | Have all Power Alarms been connected to the punchdown block? | | | | 3 |
| 9. | Have facilities twisted pairs been connected to the punchdown block? | | | | 3 |
| 10. | Are shorting plugs present for all applicable alarm and TELCO signals? | | | | 3 |
| 11. | Is a surge protector present, connected and torqued correctly for each antenna (including GPS)? | | | | Doc. 401-703-415 /3/7 |
| 12. | Is the equipment properly frame-grounded per Alcatel-Lucent document 401-200-115 specifications? Please note conductor(s) quantity, size & type: _____ | | | | Doc. 401-200-115 |

| | Item/Description | Yes | No | N/A | Ch. Ref. |
|-----|--|-----|----|-----|---------------------|
| 13. | Are all DC circuit breakers for installed equipment in the ON position? | | | | 5 |
| 14. | Have all doors, covers, panels, etc. been properly installed on cabinets? | | | | 7 |
| 15. | Are all panel/door latches in the locked position? | | | | 7 |
| 16. | Are the battery temperature compensation probes connected? | | | | 5 |
| 17. | Has proper spacing around the cabinet been provided per Alcatel-Lucent Site Preparation documentation? | | | | Doc. 401-703-443 |
| 18. | Are all rectifiers properly seated in each shelf? | | | | 5 |
| 19. | Are all battery, AC, and DC cable connections properly torqued? | | | | 4/5 |
| 20. | Have battery retaining brackets been properly installed? | | | | 5 |
| 21. | Are all <i>in-use</i> AC circuit breakers in the ON position? <i>[Note: Leave unused circuit breaker(s) in the OFF position.]</i> | | | | 5 |
| 22. | Are battery quick disconnects properly mated (or battery disconnect circuit breakers ON) for strings in use? | | | | 5 |
| 23. | Has required battery information been recorded and provided to the customer? | | | | 5 |



IN2: 3GP24i power cabinet

Overview

The table below lists the post-installation requirements for the 3GP24i power cabinet. It also provides columns for indicating compliance or non-compliance (Yes or No), and a column to indicate “not applicable” (N/A). The Chapter Reference (Ch. Ref.) column provides the specific chapter for each installation procedure, and if applicable, “Doc. 401-200-115” for grounding specifications or “Doc. 401-703-443” for site preparation.

3GP24i Power Cabinet Serial Number: _____

| | Item/Description | Yes | No | N/A | Ch. Ref. |
|-----|--|-----|----|-----|---------------------|
| 1. | Is the frame properly secured to a substructure per earthquake zoning requirements? | | | | 2 |
| 2. | Is a battery temperature compensation probe(s) properly connected? | | | | 4 |
| 3. | Is the equipment properly frame-grounded per Alcatel-Lucent document 401-200-115 specifications? Please note conductor(s) quantity, size & type: _____ | | | | Doc. 401-200-115 |
| 4. | Has proper spacing around the frame been provided per Alcatel-Lucent Site Preparation documentation?. | | | | Doc. 401-703-443 |
| 5. | Are all rectifiers properly seated? | | | | 5 |
| 6. | Are all battery, AC, and DC cable connections properly torqued? | | | | 4/5 |
| 7. | Are all DC circuit breakers in the ON position? | | | | 5 |
| 8. | Have battery retaining brackets been properly installed? | | | | 5 |
| 9. | Is the power frame negative return bus connected to the main ground bus? Please note size & type: | | | | 4 |
| 10. | Are battery disconnect switches in the ON position? | | | | 5 |
| 11. | Are all circuit breakers in the ON position? | | | | 5 |



Appendix C: Product Conformance Statements

Overview

Purpose

This appendix presents the product conformance statements that apply to the BTS 8420 and AWS 8420 radio cabinet equipment.

In regions such as North America, the statements that are required are determined primarily by national or multinational regulations. However, in some regions, contract terms determine which statements are required.

Contents

| | |
|---|-----|
| FCC and Industry Canada (IC) conformance statements | C-2 |
| Antenna exposure statements | C-5 |
| UL and UL Canada conformance statements | C-6 |
| Eco-environmental statements | C-7 |



FCC and Industry Canada (IC) conformance statements

Introduction

The statements that follow are the FCC conformance statements that apply to the CDMA BTS 8420 and AWS 8420 radio cabinet product bearing the FCC and/or IC markings.

Important! Changes or modifications not expressly approved by Alcatel-Lucent, Inc. could void the users authority to operate the equipment.

FCC Part 1

Pursuant to 47 CFR Part 1, Subpart I, all installations must be evaluated for requirements contained in Table 1, "Limits for maximum permissible exposure," in section 1.1310.

FCC Part 2

This device complies with Part 2, Subpart J - Equipment Authorization Procedures of the FCC rules.

FCC Part 15

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC part 15 class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Part 22

This device complies with Part 22, Subpart - of the FCC rules for cellular products.

FCC Part 24

This device complies with Part 24, Subpart E – Broadband PCS, of the FCC rules.

FCC Part 27

This equipment complies with Part 27 – Miscellaneous Wireless Communication Services.

FCC Part 68

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the cabinet assembly of this equipment is a label that contains, among other information, a product identifier in the format of AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

The T1 network interface on this equipment is hardwired to a punch down block, which meets the FCC specifications.

The Facility Interface Code for this equipment is 04DU9-1SN. The Service Order Code for this equipment is 6.0N. These two numbers are required when the customer orders service from the telephone company.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to connect to a compatible modular jack that is also compliant. See installation instructions for details.

The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected a line, as determined by the total RENs, contact the local telephone company. For product approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US:AAAEQ##TXXXX. The digits represented by ## are the RENs without a decimal point (e.g., 02 is a REN of 0.3). For earlier product, the REN is shown separately on the label.

There is no need of any ringer equivalence number for this equipment.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. However, if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved. If trouble is experienced with this equipment repair or warranty information may be obtained by contacting:

Technical Support Services

Alcatel-Lucent

Within the United States: 866 582 3688, prompt 1.

Industry Canada conformance statements

IC RSS 132: Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz

IC RSS 133: PCS radio standards specifications

The term "IC:" before the certification/registration number only signifies that the Industry Canada technical specifications were met.

ICES-003: Interference-causing equipment standard digital apparatus

This Class A digital apparatus complies with Canadian ICES-003.

Cet apperiel numérique de la classe A est conforme à norme NMB-003 du Canada.

IC CS-03: Specifications for Terminal Equipment, Terminal Systems, Network Protection Devices, Connection Arrangements and Hearing Aids Compatibility

This product meets the applicable Industry Canada technical specifications.

IC CS-02: Specification for Terminal Equipment, Terminal Systems, Network Protection Devices, Connection Arrangement

This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

□

Antenna exposure statements

Overview

The following is the antenna exposure statement for the equipment.

Antenna exposure statement

Antenna installations for the equipment shall be performed in accordance with all applicable manufacturer's recommendations, and national laws and regulations. To ensure correct antenna installation, the antenna installer shall perform all necessary calculations and/or field measurements to evaluate compliance with applicable national laws or regulations regarding exposure to electromagnetic fields. The supplier of radio equipment, the supplier of antenna equipment, and the integrator and builder of the site must provide sufficient information so that the limits of the exclusion zones can be determined. Information on Alcatel-Lucent-supplied equipment for the determination of RF safety compliance distances and exclusion zones is available from customer representatives. Information on the methodology and results of the compliance evaluation shall be available for inspection by officials of the governing authorities.



UL and UL Canada conformance statements

Overview

The statements that follow are the Underwriters Laboratories (UL) and UL Canada conformance statements that apply to the CDMA BTS 8420 and AWS 8420 radio cabinet product.

UL listed

This equipment is UL Listed, Information Technology Equipment.

The UL Listing applies to both the United States and Canada and is marked on the equipment main nameplate label. Should the local Authority Having Jurisdiction (AHJ) require prior or additional verification of this listing, a Product Certificate of Compliance from Underwriters Laboratories can be obtained by contacting the Business/Product Unit Applicant for the product, as follows:

Technical Support Services

Alcatel-Lucent

Within the United States: 1 866 582 3688, prompt 1

Any modifications to this equipment are not permitted without review and official authorization from the specific Certification Body. Modifications or changes authorized by official CN/CNN are assumed to have received prior approval from this Lab.

Additional information

For equipment designed for indoor applications only:

This equipment is intended for installation in restricted access locations where access is controlled or where access can only be gained by service personnel with a key or tool. Access to this equipment is restricted to qualified service personnel only.

Reference

The hazard statement severities are defined in [Chapter 2, "Safety"](#).



Eco-environmental statements

Overview

The statements that follow are the eco-environmental statements that apply to the CDMA BTS 8420 and AWS 8420 radio cabinet product.

Packaging Collection and Recovery Requirements

Countries, States, Localities, or other jurisdictions may require that systems be established for the return and/or collection of packaging waste from the consumer, other final user, or from the waste stream. Additionally, reuse, recovery and/or recycling targets for the return and/or collection of the packaging waste may be established.

For more information regarding the requirements for the collection and recovery of Packaging and Packaging Waste within specific jurisdictions, please contact the Alcatel-Lucent' Field Services/Installation - Environmental Health and Safety Organization.

For installations not performed by Alcatel-Lucent, please contact the Alcatel-Lucent Customer Support Center at:

Technical Support Services

Alcatel-Lucent

Within the United States: 866 582 3688, prompt 1

From all other countries: +1 630 224 4672, prompt 2

Recycling, take-back, and disposal of product

Electronic products bearing or referencing the symbol shown below when put on the market within the European Union, shall be collected and treated at the end of their useful life, in compliance with applicable European Union and local legislation. They shall not be disposed of as part of unsorted municipal waste. Due to materials that may be contained in the product, such as heavy metals or batteries, the environment and human health may be negatively impacted as a result of inappropriate disposal



Note: In the European Union, a solid bar under the crossed-out wheeled bin indicates that the product was put on the market after 13 August 2005.

Moreover, in compliance with legal requirements, where applicable, Alcatel-Lucent will offer to provide for the collection and treatment of waste from Alcatel-Lucent products, or from products displaced by Alcatel-Lucent offers, in accordance with applicable legislation.

For information regarding take-back of equipment by Alcatel-Lucent, or for more information regarding the requirements for recycling/disposal of product, please contact your Alcatel-Lucent Account Manager or Alcatel-Lucent Takeback Support at: takeback@lucent.com

Material Content Compliance

For product placed on the market in the European Union, the following applies:

European Union (EU) Directive 2002/95/EC, "Restriction of the use of certain Hazardous Substances" (RoHS), restricts the use of lead, mercury, cadmium, hexavalent chromium, and certain flame retardants in electrical and electronic equipment. This Directive applies to electrical and electronic products placed on the EU market from 1 July 2006, with various exemptions, including an exemption for lead solder in network infrastructure equipment. Alcatel-Lucent products shipped to the EU after 1 July 2006 will comply with the RoHS Directive.

The following notification applies to Alcatel-Lucent products distributed for sale, resale or use into the United States:

This product, part, or both may include a lithium-manganese dioxide battery, which contains very small amounts of a perchlorate substance. Special handling may apply.

For California:

Perchlorate Material - special handling may apply.

See <http://www.dtsc.ca.gov/hazardouswaste/perchlorate/>



Glossary

Symbols

-48 VDC

DC connection block for 48 volt power source (see VDC).

Numerics

12IR125

Battery designed to withstand the rigors of harsh environments and uncontrolled temperatures.

24 VDC

DC connection block for 24 volt power source (see VDC).

850 CDMA

CDMA technology in the cellular frequency band (824-894 MHz).

A AC (Alternating Current)

Continuously variable current, rising to a maximum in one direction, falling to zero, then reversing direction and repeating the cycle in the other direction.

AC convenience outlet

BTS 8420/AWS 8420 radio cabinet sites must be equipped with at least two duplex outlets for installation and maintenance procedures. The outlets are required to power test equipment and installation tools.

AC distribution panel

Module equipped with various circuit breakers and fuses which provides AC power to various equipment.

Ambient temperature

The temperature of air or other media in a designated area, particularly the area surrounding the equipment.

Anchor

Device that is buried in the ground and fastened to the cabinet for stability.

ANSI (American National Standards Institute)

The U.S. standards organization that establishes procedures for the development and coordination of voluntary American standards.

Antenna

An elevated device for radiating or receiving radio waves. It changes electrical currents into electromagnetic waves, and vice versa.

AWG (American Wire Gauge)

American wire gauge standard. American standard for classifying wire diameter.

AWS (Advanced Wireless Services)

B Backup

Facility used to replace an element which has failed.

Boom line

Rope extended from a derrick or other lifting device used for lifting a cabinet.

Boot

Weather-resistant connection for GPS and RF jumper cables.

BTS 8420/AWS 8420 radio cabinet

Provides radio access interfaces and radio resources management functions, as well as call handling with the 5ESS[®] Switch at cellular and PCS frequencies.

Bus bar

One or more conductors that serve as a common connection for a group of related devices.

C C-tap

Clamp used to connect a power lead to a main power conductor without breaking and terminating the conductor.

CDMA (Code Division Multiple Access)

Assigns each active call a unique pseudonoise code that is used by the system to distinguish that call from all other calls that occupy the same CDMA carrier band. CDMA uses spread-spectrum digital modulation techniques.

Cell

A geographical area, usually depicted as hexagon-shaped, that is served by a cellular system. Cellular technology is based on the premise that a group of radio frequencies used within one cell can be used again in distant cells.

Cell site

An installation located within a cell that houses the equipment needed to set up and complete calls on cellular telephones; for example, FM radio transmitter and receiver equipment, antennas and computers.

Circuit

1. The complete path between two terminals over which one-way or two-way communications may be provided. 2. An electronic path between two or more points, capable of providing a number of channels. 3. A number of conductors connected together for the purpose of carrying an electrical current. 4. An electronic closed-loop path among two or more points used for signal transfer. 5. A number of electrical components, such as resistors, inductances, capacitors, transistors, and power sources connected together in one or more closed loops.

CLGC

Closed Loop Gain Control.

CO (Central Office)

Grounding cable that is connected to the facility ground bus bar on the power frame.

Cord grip seal assembly

EMI/RF1 liquid-tight fitting for T1/E1, User Alarms, and Power Alarm cables.

D DAS

Distributed Antenna System. The point to which GPS and RF jumper cables are connected. This is not Alcatel-Lucent equipment. It is provided by the customer.

DC (Direct Current)

Current flow in one direction.

DC distribution panel

Module equipped with various circuit breakers and/or fuses to provide DC current to load.

Digital Only version

Version of BTS 8420/AWS 8420 radio cabinet, which contains only the Digital Shelf.

DIN (Deutsches Institute für Normung)

Germany's standards-setting organization.

Drip loop

A cable which has been curved with the arc facing the ground to prevent water from flowing to the connectors at either end of the cable. When it rains, the water drips from the lowest point of the curve towards the ground.

Dual Band

A dual band cabinet is a growth cabinet in which one or more of the carriers are of a different band than the carriers in the primary cabinet.

E E1

A four-wire voice and data trunking facility that carries 30 duplex channels in 64-kbps time slices. E1 facilities are standard for digital telecommunications in all continents except for North America.

Earthquake zone

Seismic ratings ranging from zone 1 (relatively low central office operational shock and vibration levels) to the most severe zone 4 levels. Equipment must be able to withstand earthquake zone requirements under both operational and non-operational conditions.

ED (Equipment Drawings)

Provides cabinet layout, dimensions, and installation requirements.

EMI (Electromagnetic Interference)

Any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics or electrical equipment (see RFI).

ESD (Electrostatic Discharge)

External User Alarms

Alarms generated external at the BTS 8420 radio cabinet but routed to the punchdown block(s) for reporting purposes.

F Facility Interface Panel

Pull-down component on BTS 8420 radio cabinet where the punchdown terminal block is located for terminating T1/E1, User Alarm, and power system alarms.

Feed

To supply a signal to the input of a system, subsystem, equipment or component, such as a transmission line or antenna.

Filter

A frequency selective network that transmits/receives signals of desired frequencies while greatly attenuating all other frequencies.

Filtered Version

Version of BTS 8420 radio cabinet, which contains the Digital Shelf and filters.

Fish tape

Narrow, springy steel tape designed for pushing through short lengths of ducting in order to pull cables in from the far end.

Flexent®

Registered trademark of Alcatel-Lucent.

G GND (Ground)

See Ground.

GPS (Global Positioning System)

A system of 24 satellites that provide, among other things, extremely accurate timing information to CDMA-equipped cell sites.

Ground

A conducting connection between equipment or an electrical circuit and earth, or other conductive body that is used in place of the earth.

Grounding Electrode System

The conductive objects that are intentionally bonded to furnish connection to earth (e.g. buried ring ground with ground rods, electrically continuous buried metallic water pipe, electrolytic ground electrode, etc.).

I IDC (Insulation Displacement Connector)

Block which provides electrical protection and/or termination location inside the BTS 8420 radio cabinet.

Interconnect

Linkage used to join two or more communications units or equipment.

IPM

Integrated Power Module. Converts AC input line voltage to +24 VDC for the equipment inside the BTS 8420 radio cabinet.

J Jumper

Connections between terminal blocks on the two sides of a distribution frame.

Junction box

Steel box inside equipment where low-voltage power cable joints are made.

K Knockout

Discs partially punched out on the side or base of a terminal or junction box to the appropriate size for feeding cable into the box.

kW (Kilowatts)

L Landline

A telephone accessed by landline media.

LB (Left Body)

Lifting eyes

Bolts located on the top of the cabinet for connecting slings to lift the cabinet.

Line side

Portion of a device that is connected to an external facility that provides power from a power source.

Load side

Portion of a device that is connected to an external facility that is using the power from a power source.

Low Power Version

Version of BTS 8420 radio cabinet, which contains the Digital Shelf, filters, and amplifiers. Also, AWS 8420 radio cabinet in the present release.

Lugs

A tag or projecting terminal onto which a wire may be connected by crimping or soldering.

M MGB (Main Bus Bar)

A copper bus bar used to provide the electrical interface for connection of the isolated ground plane to the integrated ground system.

Mobile Switching Center

See MSC.

Multiplexer

Equipment that provides a means of transmitting two or more signals over the same transmission path.

N NEC (National Electrical Code)

Standard that governs the use of electrical wire, cable, and fixtures, and electrical and

optical communication cable installed in buildings.

Network Interface

The demarcation between the LEC infrastructure and the Customer Premises Equipment (CPE). Equipment located at this point is intended to allow the LEC to determine whether transmission problems are within the network itself or the CPE.

Neutral ground

An intentional ground applied to a neutral conductor or neutral point of a circuit, equipment, or system.

NFPA (National Fire Prevention Association)

Standards and code writing organization made up of volunteer industrial and institutional subject-matter-expert committees.

Nm (Newton Meter)

O OA&M (Operation, Administration, and Maintenance)

Generic name given to functions such as technical interfaces, diagnostics, service measurements, and status reports.

OMP (Operation Management Platform)

This component provides a centralized point of access for wireless systems' operation and maintenance. The OMP provides a dedicated processor from which system operators can perform multiple operation, administration, and maintenance (OA&M) tasks simultaneously.

Open circuit

A path that contains an infinite impedance, and is available for use.

P Paired cable

Cable made up of one or more separately insulated twisted-wire pairs, none of which is arranged with another to form quads.

Panelboard

A flat board consisting of buses and automatic over-current devices with or without switches, for the control of electrical circuits. The panelboard is designed to be placed in a cabinet with only front access.

PCB (Power Circuit Breaker)

The primary switch used to apply and remove power from equipment. Used on AC circuits rated in excess of 1500 V.

PCS (Personal Communications Services)

Services for digital RF equipment operating in the 2 GHz spectrum.

Pigtail

A short length of electrical conductor permanently affixed to a component, used to connect the component to another.

Positive terminal

The terminal from which conventional current leaves the battery.

Punchdown terminal block

Used for terminating T1/E1, User Alarms, and power cables. The block is located external to the indoor BTS 8420 radio cabinet.

R Rectifiers

Device for converting alternating current (AC) into direct current (DC).

Return

A return path for current.

RF (Radio Frequency)

The electromagnetic wave used for, among other things, cellular voice and data communications.

RFI (Radio Frequency Interference)

See EMI.

RTV

Silicone used for sealing or potting compound.

S Shield

A housing, screen, sheath, or cover that substantially reduces the coupling of electric, magnetic, or electromagnetic fields into or out of circuits or transmission lines.

Short circuit

A direct low-resistance connection between conductors not normally in contact with each other.

STBY (Standby)

System operations pertaining to a power saving condition or status of operation of equipment that is ready for use, but not in use.

String

A series of elements considered as a whole.

Surge protector

Protective device used to limit surge voltages by discharging or bypassing any unwanted surge current that may enter a building or equipment.

System test

Test performed after installation and power-up of the cabinets, and after GPS antenna jumper cable is connected. The RF jumper cable is not connected during testing.

T T1

A four-wire voice and data trunking facility that carries 24 duplex channels over 56-kbps time slots.

Tagged out

TELCO (Telephone Company)

Terminal

A device capable of sending, and/or receiving information over a communications channel.

Thermal Probe

Device used for sensing the temperature of an object or air.

TIP N TELL

Indicator on cabinet's package that indicates if the cabinet was mishandled or tipped during shipment.

Torque

Moment of force acting on a body and tending to produce rotation about an axis.

Twisted-pair cable

See Paired cable.

U UL (Underwriters Laboratories)

Laboratories that test materials and equipment against predetermined performance standards.

Upgrade

To improve service by offering better facilities.

V VDC (Volts direct current)

W Weatherproof

Designed to be used outdoors under any number of specified climatic conditions.

Z Zero Clearance Installation

Cabinets are placed in close proximity to a wall or other structure, and the available space behind the cabinet does not permit the installer to access the rear cabinet mounting brackets.

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