

FirstLine P Distribution Cabinet
For 80kVA - 125kVA

User's Manual



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SECTION 1

Introduction

Overview

The FirstLine P Distribution Cabinet for 80 kVA, 100 kVA, and 125 kVA is a steel, free-standing cabinet capable of being surface or flush-mounted. The purpose of the Distribution Cabinet is to provide a break-out panel for electrical connections to multiple single and three-phase loads at the output of the Transformer Cabinet. See Figure 1 for the outline drawing of the Distribution Cabinet.

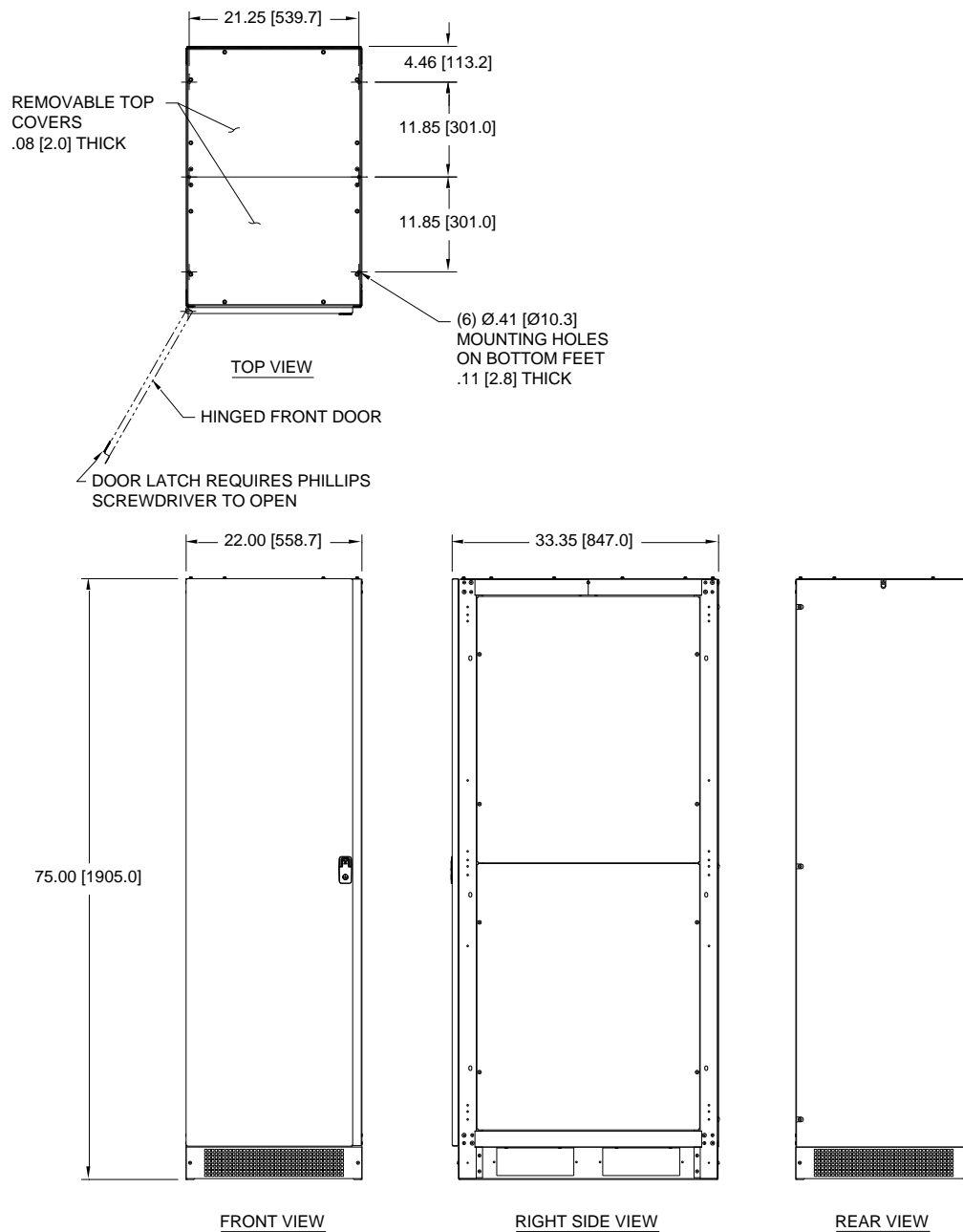


Figure 1 - The FirstLine P Distribution Cabinet

Applicability

This equipment can be applied to UPS models FLU-80-00, FLU-100-00, and FLU-125-00 only when used in tandem with a FirstLine P Transformer Cabinet that has a 208 V/120 V wye output. These UPS models operate at 480 V, 60 Hz and can be wired as delta in and delta out (3 wire plus ground) or wye in and wye out (4 wire plus ground). The Transformer Cabinet will then be connected to the UPS to supply the 208 V/120 V wye output to the Distribution Cabinet.

Part Numbers

The part numbering for the Distribution Cabinet is:

- FLU-PDC-1 (single panelboard version)
- FLU-PDC-2 (double panelboard version)

Square D[®] brand NQ 42 pole circuit breaker panelboards are provided by Schneider Electric. The part number is as follows:

- NQ442L2

Information and instruction manuals are also provided by Schneider Electric and document numbers are as follows:

- NQ/NQM Panelboards and QONQ Load Centers Information Manual: 80043-712-05

SECTION 2

SAFETY WARNINGS

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

READ AND FOLLOW ALL SAFETY INSTRUCTIONS

- Do not use outdoors.
- Do not route wiring across or near hot surfaces.
- Do not install near gas or electric heaters.
- Equipment should be installed where it will not readily be subjected to tampering by unauthorized personnel.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Do not use this equipment for other than intended use.
- The electric wiring connects to the output of a Firstline P Transformer Cabinet. Hazardous voltages may be present even when the electrical supply to this equipment is turned off.
- Read and follow the instructions that came with the associated UPS or emergency lighting system before operating this equipment.

DANGER

This equipment contains lethal voltages. All repairs and service should only be performed by authorized service personnel. There are no user serviceable parts inside this equipment. Operation of switches and breakers require access to the cabinet interior and should only be performed by qualified personnel exercising appropriate caution.

WARNING

The electric wiring connects to the output of a UPS via the transformer cabinet which contains its own energy source (batteries). The UPS output may carry live voltage even when the UPS is not connected to an ac supply.

To reduce the risk of fire and electric shock, install this equipment in a humidity controlled, indoor environment, free of conductive contaminants. Do not operate near water or excessive humidity (95% maximum). If condensation is present, the equipment must be allowed to completely dry before operation.







Output circuit breakers must be provided by others. This circuit protection must meet the output protection requirements as shown in Table 3 and Table 5 in Section 4 of this manual.

Refer to NQ/NQM Panelboards and QONQ Load Centers Information Manual (80043-712-05) for important safety precaution information.

CAUTION

The UPS associated with this equipment contains batteries. Batteries can present a risk of electrical shock or burn from high short circuit current. Observe proper precautions. Servicing should only be performed by qualified service personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries. Read, understand, and follow all instructions in the UPS manual before attempting any operations involving the battery.

Table 1 - Symbols

	Danger / Risk of Electric Shock
	Caution
	Risk of Explosion
	Note
	Ground Connection
	Electrostatic Sensitive Device

SECTION 3

Cabinet Setup

This SECTION describes:

- Equipment inspection
- Floor loading and clearances
- Removing and replacing the cabinet panels
- Unloading the cabinet(s)
- Attaching the cabinet to the Transformer Cabinet

Inspecting the Equipment

If any equipment has been damaged during shipment, keep the shipping and packing materials for the carrier or place of purchase and file a claim for shipping damage. If you discover damage after acceptance, file a claim for concealed damage.

To file a claim for shipping damage or concealed damage: 1) File with the carrier within 15 days of receipt of the equipment, 2) Send a copy of the damage claim within 15 days to your service representative.

Floor Loading

When planning the installation, consider the battery cabinet weight for floor loading. The strength of the installation surface must be adequate for point and distributed loading. The approximate weights are shown in the following table.

Table 2 - Model Floor Loadings

STANDARD MODEL FLOOR LOADING		
Model	Maximum Weight	Point Loading
FLU-PDC-1	300 lbs (136 kg)	5 lb/in ² (0.4 kg/cm ²)
FLU-PDC-2	325 lbs (147 kg)	5.4 lb/in ² (0.4 kg/cm ²)

Clearances

The following clearances are recommended for the FirstLine P Distribution Cabinet.

From Front of Cabinet	36" (91.4 cm) working space
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Unloading the Cabinet(s)

The following tools are required for unloading the cabinet(s):

- Wrenches for 3/8" lag bolts.
- Forklift or pallet jack

CAUTION



The cabinets are heavy (see Table 2). Unloading the cabinets requires at least two people to safely remove the cabinets from the pallet.

To remove the Distribution cabinet from the ship pallet:

1. Make sure the forklift is rated for the cabinet weight.
2. Make sure the path traveled has sufficient support for the combined weight of the forklift and the cabinet.
3. Make sure forks are at maximum separation.
4. Use a very strong ratchet strap (or similar device) of sufficient strength to tie the upper part of the cabinet to the forklift tower before moving.
5. Keep people out of the fall zone. If the cabinet topples over, stand clear
6. With a Phillip's screwdriver, remove the two kick panels. These will be remounted when the cabinet is in place.
7. Remove all banding, wrapping and foam protection.
8. Remove the six 3/8" lag bolts securing the cabinet to the pallet. See Figure 2.



Figure 2 - Pallet Mounting Hardware

9. Lift the cabinet with a forklift one to two inches (1"-2" [2.5-5cm]) above the pallet.
10. Slide the pallet completely away from the raised cabinet.

11. Carefully move the cabinet to the desired location and slowly lower the cabinet to the floor or other appropriate flat surface.
12. Remount the two kick panels.

Attaching the Cabinet to the Transformer Cabinet

The Distribution Cabinet was constructed so that it can be mounted to the side of the Transformer Cabinet if desired. To attach the Distribution Cabinet to the Transformer Cabinet:

1. Remove left side panel of Transformer Cabinet and save hardware.
2. Butt right side of Distribution Cabinet up against the left side of the Transformer Cabinet.
3. Bolt the cabinets together at (6) locations with the supplied 5/16 hardware through the slots noted as "A" in Figure 3.
4. Mount left side panel of Transformer Cabinet on the left side of the Distribution Cabinet using the hardware from the Transformer Cabinet.

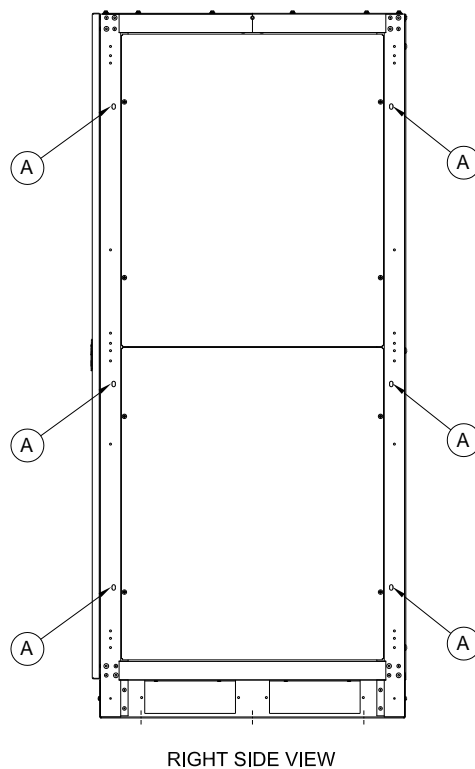


Figure 3 - Cabinet to Cabinet Mounting Hole Locations

Free-Standing Cabinet

The Distribution Cabinet can be used as a free-standing cabinet, but side panels must be ordered separately and attached to both sides of the cabinet.

SECTION 4

Electrical Installation

WARNING



Only qualified service personnel (such as a licensed electrician) should perform the installation and initial startup. There is a risk of electrical shock.

Wiring Preparation

1. Verify that the equipment is the proper type.
2. All wiring is to be in compliance with all applicable codes.
3. Verify that the source circuit capability is in compliance with the requirements shown in Table 3.
4. Select wire size in compliance with Table 3.

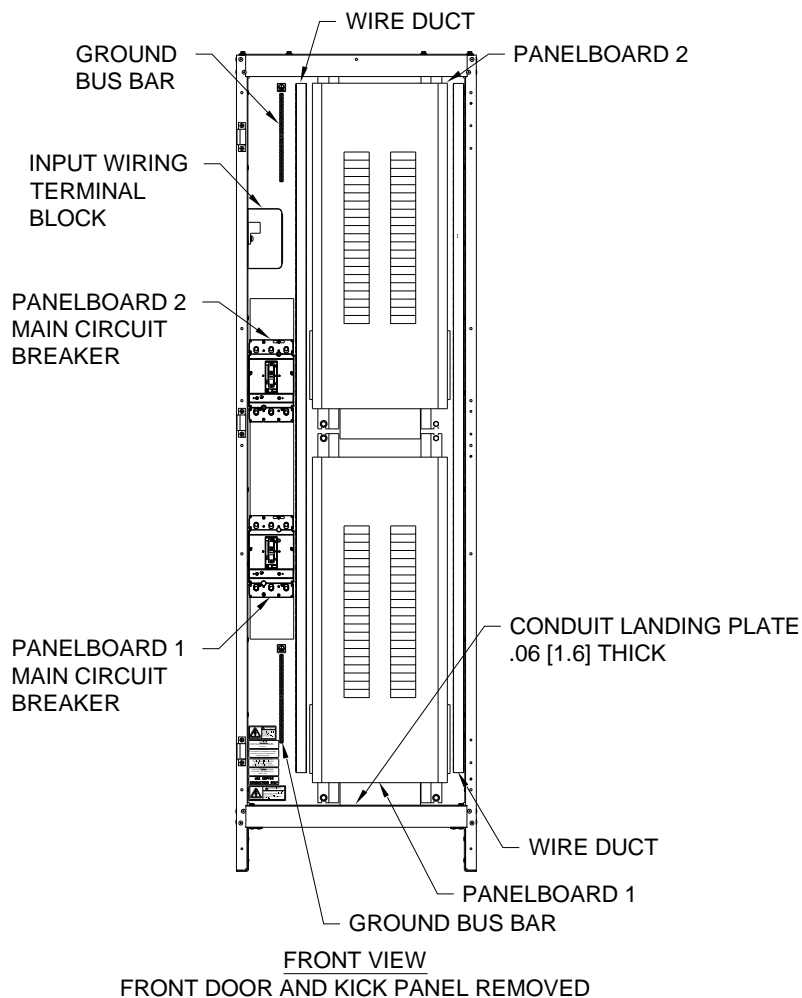


Figure 4 - Inside Front View of Distribution Cabinet

Table 3 - Wire Size Requirements and Maximum Current Ratings

*Wire must be rated 75°C or higher.

208 V Input:			
UPS Rating (kVA)	Rated Current (A)	Minimum Wire Size	Ground Wire Size
80	222	500 kcmil or 2 X 4/0	#4
100	277	2 X 250 kcmil	#3
125	346	2 X 500 kcmil	#2

Panelboard Circuit Breakers (225 Amps Max. for Each Panelboard)					
Breaker Rating (Amps)	Minimum Wire Size	Breaker Rating (Amps)	Minimum Wire Size	Breaker Rating (Amps)	Minimum Wire Size
10	#14	35	#8	70	#4
15	#14	40	#8	80	#3
20	#12	45	#6	90	#2
25	#10	50	#6	100	#2
30	#10	60	#4		

Table 4 - Terminal Tightening Torques

INPUT POWER CONNECTIONS TERMINAL TORQUE

Wire Size	Torque
#4 AWG – 500 kcmil	375 inch - pounds

POWER GROUND LUG TORQUE

Wire Size	Torque
#6 AWG – 350 kcmil	275 inch - pounds

GROUNDING BAR TORQUE

Wire Size	Torque
#10 – 14 AWG	20 inch - pounds
#8 AWG	25 inch - pounds
#4 – 6 AWG	35 inch - pounds
Two #12 OR 14 AWG	25 inch - pounds

NEUTRAL BUS BAR TORQUE

Wire Size	Torque
#4 AWG – 14 AWG	25 - 35 inch - pounds

NEUTRAL LUG TORQUE

Wire Size	Torque
#6 AWG – 350 kcmil	275 inch - pounds

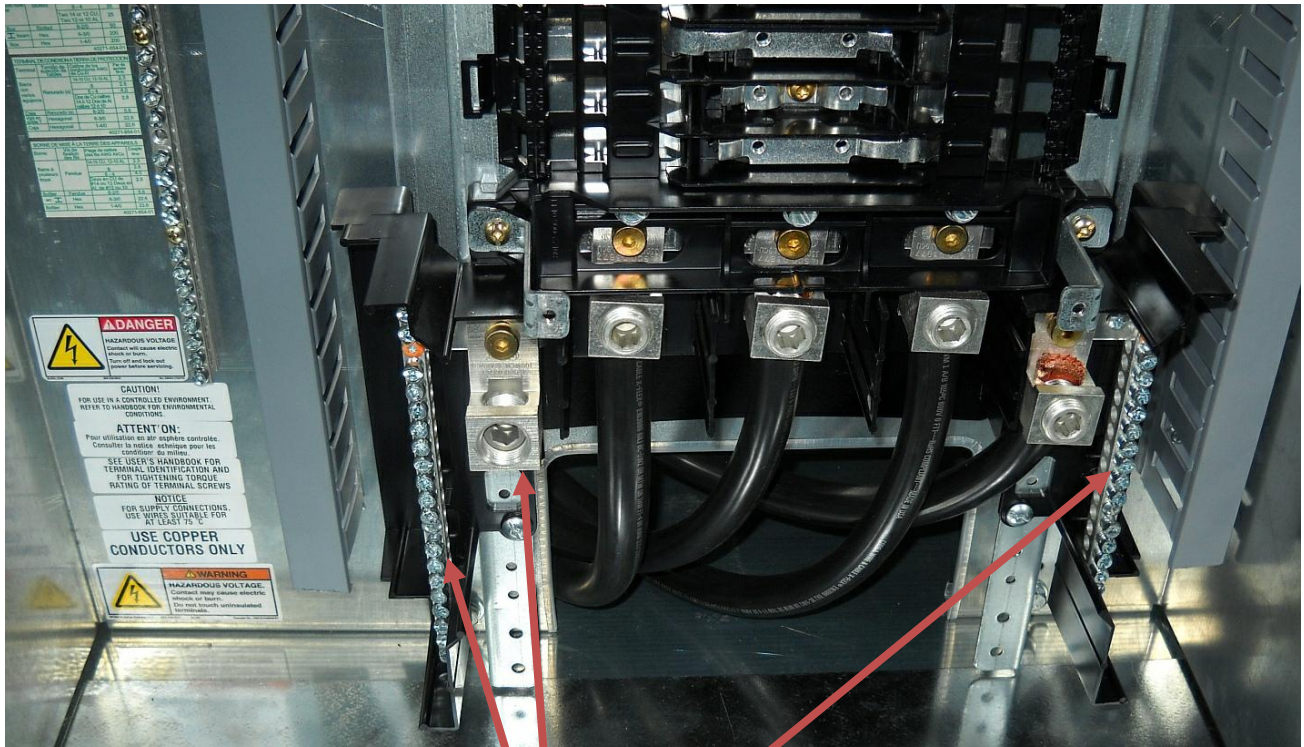
Wiring Installation

1. Switch off utility power to the distribution point where the UPS will be connected. Be absolutely sure that there are no hazardous voltages present. Use lockout/tagout procedures to assure safety.
2. Open the front door of the Transformer Cabinet and Distribution Cabinet.
3. Connect wires from the "OUTPUT TO LOAD" terminal block in the transformer cabinet to the "FROM UPS OUTPUT TRANSFORMER" terminal block in the distribution cabinet. The wire must be in compliance with Table 3 and the terminals must be torqued in compliance with Table 4. Make sure that phase A connects to phase A and so on. A proper installation requires fire wires; Phase A, Phase B, Phase C, Neutral, and Ground.
4. Remove panelboard cover(s) and mount circuit breakers, refer to NQ/NQM Panelboards and QONQ Load Centers Information Manual (80043-712-05). See Table 5 below for circuit breaker types and ratings.
5. Connect wires from the panelboard circuit breakers in the distribution cabinet to the load. The wire must be in compliance with Table 3 and the terminals must be torque in compliance with Table 4. Make sure that Phase A connects to Phase A and so on. See Figure 5 for neutral bus bar and lug locations on panelboard.
6. Verify all work was done correctly.
7. Remount the panelboard cover(s) and terminal block covers.

Table 5 - Panelboard Circuit Breakers

Panelboard Circuit Breakers (225 Amps Max. for Each Panelboard)		
Circuit Breaker Type	Number of Poles	Ampere¹ Rating
QO or QOB	1	10-70 A
	2	10-100 A
	3	15-100 A

1. Only one 80-100 Amp rated circuit breaker per panelboard. If an 80 –100 Amp circuit breaker is used, all other circuit breakers shall be no more than 10 – 70 Amp rated.



Neutral Lug and Bus Bars

Figure 5 - Panelboard View with Cover Removed

SECTION 5

Maintenance

Regular care will assure maximum availability of power.

Wipe the cabinet exterior with a soft cloth, slightly dampened with water, to remove dust.

Consider performing periodic infrared temperature measurements on the circuit breaker terminations. This will require access to the cabinet interior. There are hazardous voltages present and any work must be performed using caution. Only trained service personnel should perform this work. Elevated temperatures of the terminations usually are the sign of a loose connection, but can also signal that a breaker is failing. Loose connections should only be serviced after removal of power.

If the system is powered down, consider removing accumulated dust from the cabinet interior using a vacuum cleaner.