

## Certified Electrician's Instructions

# How to Connect Utility Conductors and an Emergency Power Off (EPO) Switch to the 80kW InfraStruXure PDU

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**Connection to Be Performed by a Licensed Electrician Only!**



The following procedures require a licensed electrician:

- Connection of utility conductors
- Installation of an upstream circuit breaker
- Connection to the Main Input switch, Bypass Input switch, Cross Tie Output and MCCB Sub-feed circuit breakers
- Connection to a branch circuit
- Connection of an EPO switch

### Procedures in this instruction sheet

The procedures in this instruction sheet provide instruction for electricians on how to connect to the main input switch, bypass input switch, cross tie output breaker, MCCB sub-feed circuit breaker, and Emergency Power Off switch. Review the information provided in the InfraStruXure Configure-To-Order (CTO) report and accompanying documentation for instructions specific to your installation, and always follow the NEC and local codes. Before an electrician begins connecting your system, an APC Field Service Engineer must:

- Position and level the Symmetra PX UPS, InfraStruXure PDU, and Battery Enclosure.
- Exchange side panels and attach the Symmetra PX UPS, InfraStruXure PDU, and Battery Enclosure.



**Note**

You can check for updates to this manual by clicking on the **User Manuals** link on the **Support** page of the APC Web site ([www.apc.com](http://www.apc.com)). In the list of InfraStruXure manuals, look for the latest letter revision (A, B, etc.) of the part number on this manual

## Electrical requirements

	208VAC	480VAC	600VAC
Upstream Circuit Breaker † ‡	350A	150A	125A
Conductors to Main Input Switch † ‡	With transformer: 3W + G + GEC to building steel** Without transformer: 4W + G		
Conductors to Bypass Input Switch † ‡	4W + G		
Conductors to Cross Tie Output Breaker † ‡	4W + G		
Conductors to MCCB Sub-feed Breaker † ‡	4W + G		
Max. input conductor size (top entry)	500kcmil for S5 frame	1/0 AWG for S3 frame	1/0 AWG for S3 frame
Lugs for input conductors (top entry)*	Compression lug (3/8" diameter)	Compression lug (3/8" diameter)	Compression lug (3/8" diameter)
Max. input conductor size (bottom entry)	600kcmil for S5 frame	600kcmil for S3 frame	600kcmil for S3 frame
Lugs for input conductors (bottom entry)	Terminal blocks	Terminal blocks	Terminal blocks
Max. bypass input conductor size (top entry)	500kcmil for S5 frame	500kcmil for S5 frame	500kcmil for S5 frame
Lugs for bypass input conductors (top entry)*	Compression lug (3/8" diameter)	Compression lug (3/8" diameter)	Compression lug (3/8" diameter)
Max. Cross Tie and MCCB conductors (top entry)	500kcmil for S5 frame	500kcmil for S5 frame	500kcmil for S5 frame
Lugs for Cross Tie and MCCB conductors (top entry)*	Compression lug (3/8" diameter)	Compression lug (3/8" diameter)	Compression lug (3/8" diameter)
Recommended wire sizing †			
L1, L2, L3	400kcmil (350A)	1/0 AWG (150A)	2 AWG (125A)
N ††	400kcmil	1/0 AWG	2 AWG
G	3 AWG	6 AWG	6 AWG
GEC	1/0 AWG	6 AWG	8 AWG

† Provided by customer.

‡ Consult local and national codes for sizing requirements.

†† Only on PDUs without a transformer.

\* In top cable entry, compression lugs are not used for the N and G wires, a mechanical connection is used.

\*\* GEC not run if dual (bypass) input is present.

## Torque specs and tools required—overhead wiring

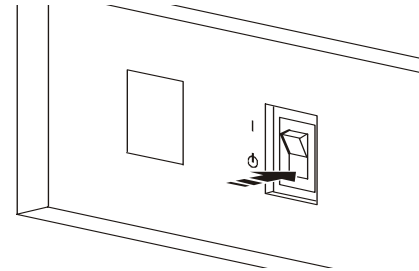
Terminal	Torque	Tools
L1, L2, L3	160 in-lb	11-ton crimping tool for lug onto the wire, 6-mm Allen wrench for compression lug onto the circuit breaker
N (transformeless only)	125 in-lb	13-mm socket wrench
G	45 in-lb	slotted screwdriver
GEC	50 in-lb	slotted screwdriver

## Torque specs and tools required—underfloor wiring

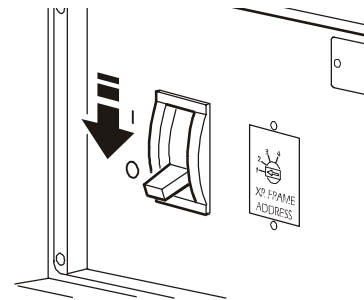
Terminal	Torque	Tools
L1, L2, L3	500 in-lb	1/2-inch Allen wrench
N (transformeless only)	125 in-lb	13-mm socket wrench
G	45 in-lb	slotted screwdriver
GEC	50 in-lb	slotted screwdriver

### Ensure Total Power Off

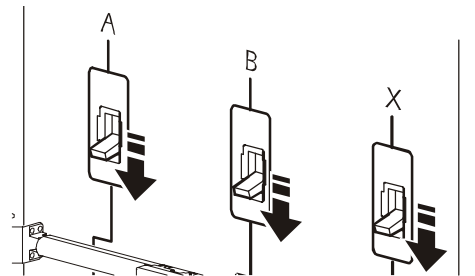
1. Set the **UPS System Enable** switch to the OFF position.



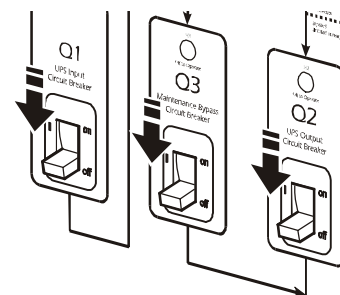
2. Set the Battery Enclosure and any XR Battery Enclosure **DC Disconnect** circuit breaker to the OFF position.



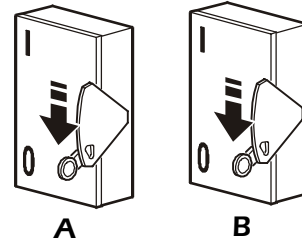
3. Set the **Main Input** switch (A), and, if applicable, the **Q10 Bypass Input** switch (B), and **Cross Tie Output** or **MCCB Sub-feed** circuit breaker (X) on the PDU to the OFF position.



4. Open (turn OFF) the **Q1**, **Q2**, and **Q3** circuit breakers on the PDU.



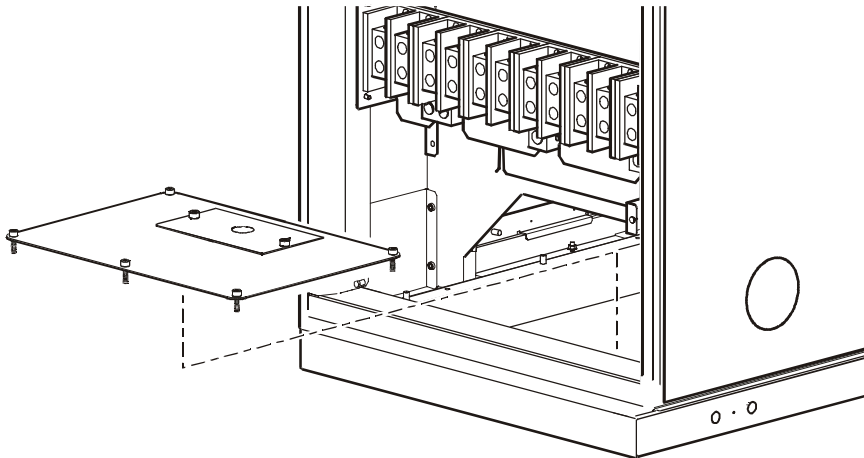
5. Set the upstream main input (and bypass input, if applicable) utility circuit breaker to the OFF or Locked Out position.



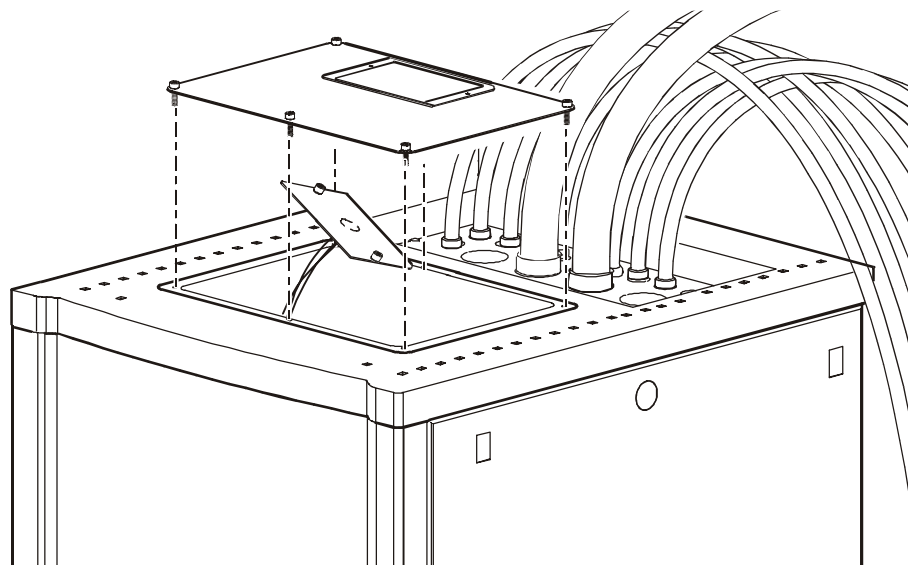
### Attach conduit to the PDU for the conductors

1. Remove one of the rectangular gland plates by loosening the captive screws, using a Phillips or standard screwdriver.

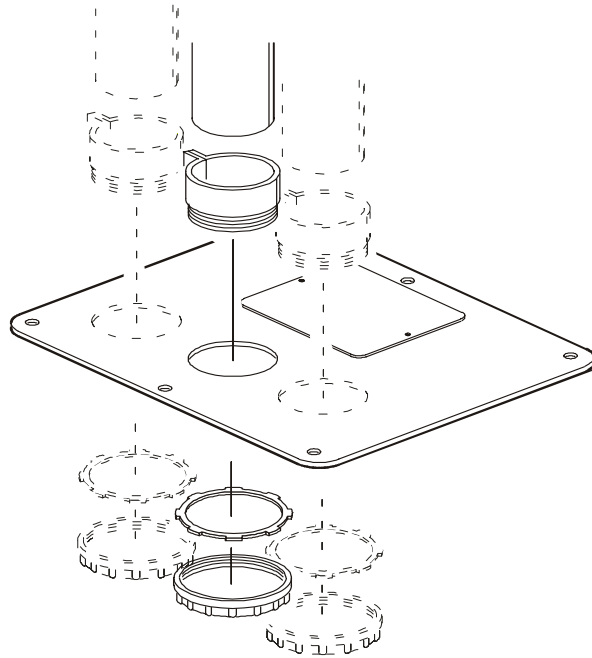
*For wiring under a raised floor:* remove the plate in the floor of the PDU.



*For overhead wiring:* detach the user connection plate, route it through the opening in the gland plate, carefully set it aside (do not disturb the connected wires), and remove the gland plate in the roof of the PDU.



2. Cut an appropriately sized hole in the gland plate for each switch (or breaker) that you are connecting to.
3. Re-attach the gland plate.
4. Install a lock-nut and bushing to the conduit.
5. Thread the conduit through the hole in the gland plate.



### Install a utility/branch circuit breaker



**When you connect the InfraStruXure PDU to utility power, you must install a circuit breaker to protect the PDU from over-current.**

Determine the amperage of the circuit breaker that you need to install:

Input Voltage	Circuit Breaker Amperage
208 V	350 A
480 V	150 A
600 V	125 A

### Run input conductors

For overhead wiring, route the conductors directly to the terminals on the Main Input switch, and if applicable, the Bypass Input switch and Cross Tie Output or MCCB Sub-feed circuit breaker. For wiring under the floor, route the conductors to the terminals in the bottom of the PDU that correspond to the Main Input switch, and if applicable, the Bypass Input switch and Cross Tie Output or MCCB Sub-feed circuit breaker.

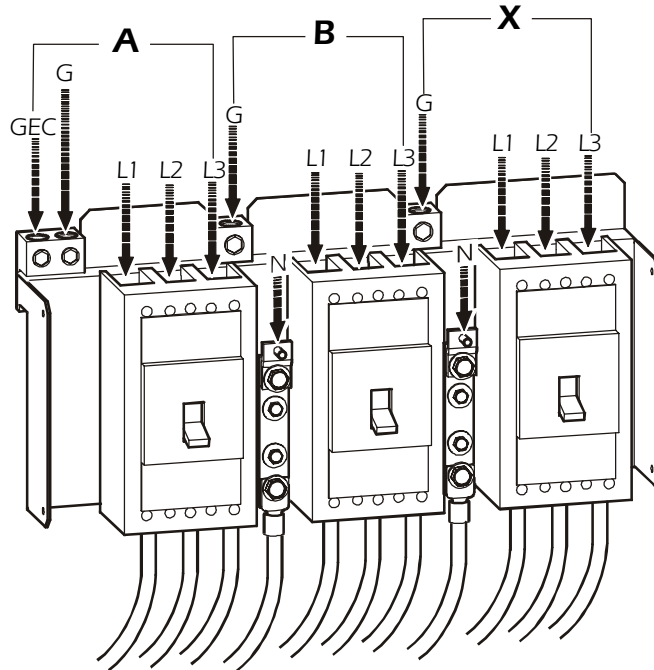
**Overhead wiring.** See the following illustrations for the input conductors that you need to run for your PDU. The illustrations show PDUs with a Main Input (A), Bypass Input (B), and Cross Tie Output or MCCB Sub-feed circuit breaker (X). If your PDU does not have all three circuit breakers, make the connections shown for the breakers that are on your PDU. For overhead wiring, the PDU is equipped with lugs for the neutral and ground connections that you need to make. Crimp the provided lugs onto each ground and neutral wire. Refer to Torque specs and tools required—overhead wiring on page 2 of this instruction sheet when making connections.



**Connect the input conductors to the terminals according to the labels on the terminals. Use copper conductors only.**

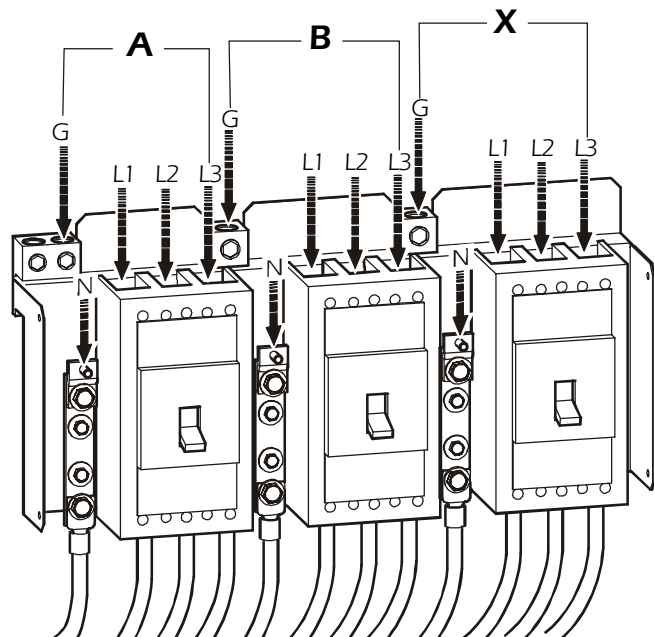
**208/480/600 V input with a transformer**

- A: 3-phase, 3-wire + ground + GEC to building steel
- B: 208V, 3-phase, 4-wire + ground
- X: 208V, 3-phase, 4-wire + ground



**208V input without a transformer**

- A: 208V, 3-phase, 4-wire + ground
- B: 208V, 3-phase, 4-wire + ground
- X: 208V, 3-phase, 4-wire + ground



### Under-floor wiring

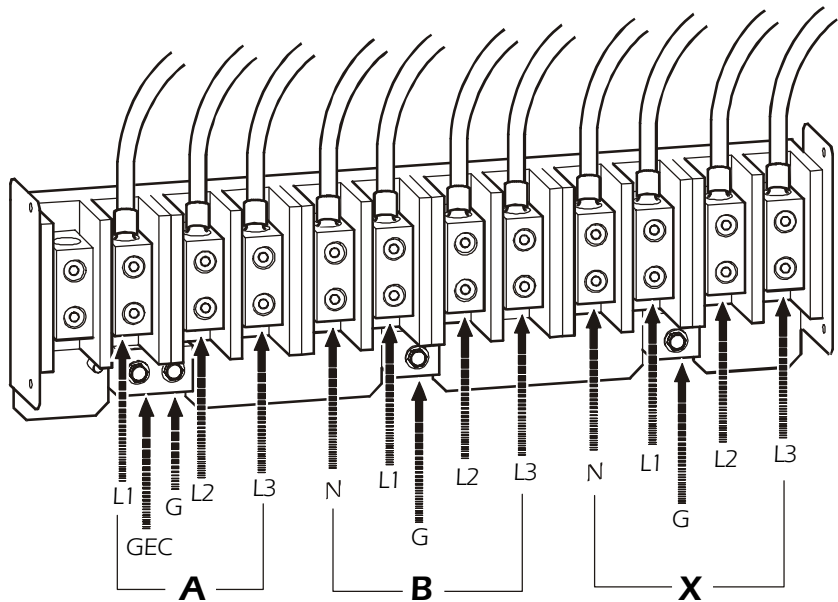
See the illustrations below for the input conductors that you need to run for your PDU. The illustrations show PDUs with a Main Input (A), Bypass Input (B), and Cross Tie Output or MCCB Sub-feed circuit breaker (X). If your PDU does not have all three circuit breakers, make the connections shown for the breakers that your PDU has. Referenced Torque specs and tools required—underfloor wiring on page 3 of this instruction sheet when making connections.



**Connect the input conductors to the terminals according to the labels on the terminals.  
Use copper conductors only.**

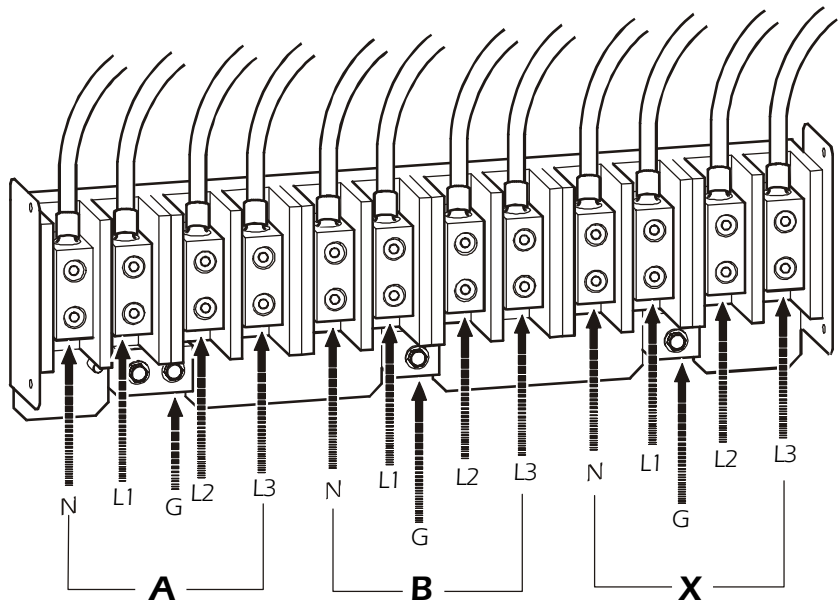
#### 208/480/600 V input with a transformer

- A: 3-phase, 3-wire + ground + GEC to building steel
- B: 208 V, 3-phase, 4-wire + ground
- X: 208 V, 3-phase, 4-wire + ground



#### 208 V input without a transformer

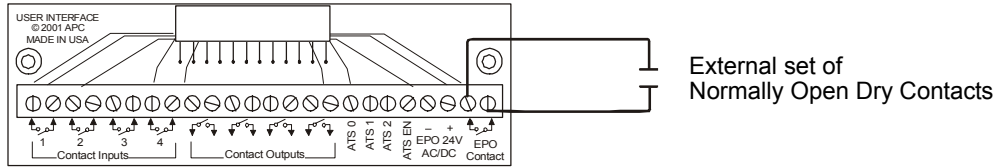
- A: 208 V, 3-phase, 4-wire + ground
- B: 208 V, 3-phase, 4-wire + ground
- X: 208 V, 3-phase, 4-wire + ground



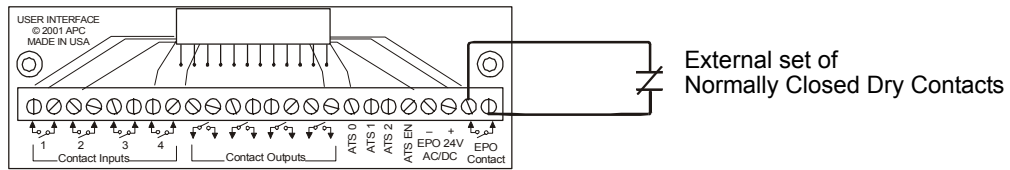
## Connect an Emergency Power Off (EPO) switch

1. Connect the switch to the EPO connection point terminals located on the bottom side of the PDU user connection plate. Read the label next to the terminal block to determine which terminals to connect to for the signal type you are using:

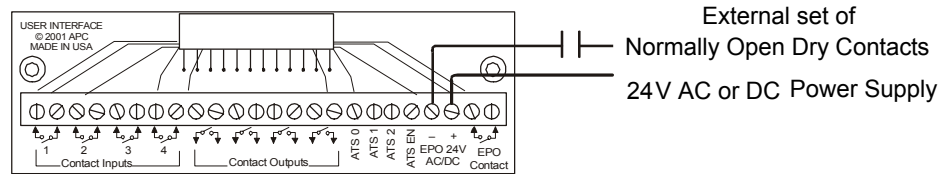
### – Contact Closure—Normally Open



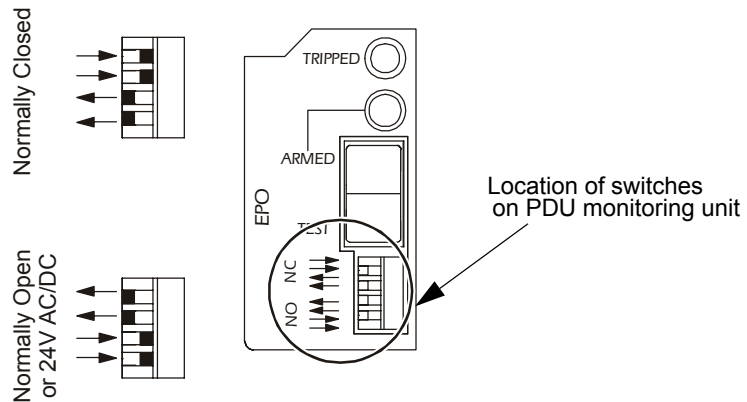
### – Contact Closure—Normally Closed



### – 24VAC/VDC—Normally Open



2. Verify that the EPO DIP switches on the PDU monitoring unit are configured properly for the signal type you are using. The labels above the switches and the figure below show the correct settings for both the Normally Open (NO) and Normally Closed (NC) position.



The default setting on the EPO interface on the PDU monitoring unit is for a **Normally Open (NO)** switch.



For information on testing the Emergency Power Off (EPO) switch, see the *80kW InfraStruXure PDU Operation and Configuration* manual (990-1468C).









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Connect to localized APC Web sites for specific countries, each of which provides customer support information.
  - **www.apc.com/support/**  
Global support searching APC Knowledge Base and using e-support.
- Contact an APC Customer Support center by telephone or e-mail.
  - Regional centers:

Direct InfraStruXure Customer Support Line	(1)(877)537-0607 (toll free)
APC headquarters U.S., Canada	(1)(800)800-4272 (toll free)
Latin America	(1)(401)789-5735 (USA)
Europe, Middle East, Africa	(353)(91)702000 (Ireland)
Japan	(0) 3 5434-2021
Australia, New Zealand, South Pacific area	(61) (2) 9955 9366 (Australia)

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