Symmetra PX 10-80 kW 208 V
Installation Sheet
IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

ALL safety instructions in the Safety Sheet must be read, understood and followed when installing the UPS system. Failure to do so could result in equipment damage, serious injury, or death.

WARNING! The UPS system has no built-in disconnection devices for AC output and DC input. An AC output over-current protection and AC output disconnect must be provided by the customer.

After the UPS has been electrically wired, do not start it up. Start-up is commissioned to APC-authorized personnel only.

CAUTION! For customer-supplied external batteries, over-current protection and a disconnecting device for the battery circuits must be provided by the customer.

Ensure that the unit is in its final location prior to installation.

1 Cable Entry
Bottom Cable Entry

Loosen screws to remove plate. Punch holes as required and reinstall panel before mounting wiring hardware.

2 AC Input, AC Output, and Ground Cable Landings

CAUTION! Ensure clockwise phase rotation and neutral location.

Bolts and lugs are supplied with the unit. Power terminal bolt diameter is 10 mm, torque value 18.4 lb-ft/25 Nm.

Connect power input and output wiring to terminals. Connect either one cable lug on each busbar or two on each – one from the front and one from the rear of each busbar.

Proceed with ground connections. Feed ground wire through provided ferrite beads.

Route input and output wires in separate conduits as follows:
For output cables L1, L2, L3 & N, use A and B conduits. For L1, L2, L3 & N bypass input, use D and F. For L1, L2, L3 & N mains input, use conduits C and E.

Feed DC cables through the chase nipple in the left side of the UPS and into the Battery Enclosure.
3 EPO Switch Wiring

The UPS is to be connected to either a dry contact or a 24Vdc Emergency Power Off (EPO) switch.

The EPO circuit is considered Class 2 and SELV (Safety Extra Low Voltage). A SELV circuit is isolated from primary circuitry through an isolating transformer and designed so that under normal conditions, the voltage is limited to 42.4Vac peak or 60Vdc. SELV and Class 2 circuits must be isolated from all primary circuitry. Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is SELV or Class 2.

For installations in US
- CL2Class 2 cable for general purpose use.
- CL2PPlenum cable for use in a vertical shaft or from floor to floor.
- CL2R Racer cable for use in dwellings and raceways.
- CL2XLimited use cable for dwellings and raceways.

For installations in Canada
- CL2RCertified, type ELC (Extra-Low-Voltage Control Cable).
- CL2XCertified, type ELC (Extra-Low-Voltage Control Cable).

4 Communication cables

Side panel removal

WARNING!
Ensure Total Power OFF before removing side panel (see Total power OFF procedure).

Use 5-m standard Cat 5 Data cable (supplied). If cable length is inadequate, a longer Cat 5 cable, or couplers, can be used (not supplied). Maximum length of standard CAT 5 data cable: 50 m.
as required.

If the UPS has been installed between devices, and side panels are inaccessible, remove the Bypass Static Switch Module to gain access.

Communication wiring to optional equipment

J6
4 Ground
201
N/O EPO Control
N/C EPO Control
3/2 Relay Coil 1
1 Internal Power
+24V Supply

J8
4 Return
EPO control for Battery Cabinet
1 Trip Voltage

Input/Output Wiring of Ancillary Equipment

J1 and J3 For use only with ISX

Connection of Maintenance Bypass Panel

Input/Output Wiring of Maintenance Bypass Panel (MBP)

Input signals: Contact load: TTL

Output Relays:
0.3VA/1.9kW 240V/8A

AC Output
AC Input

Specifications

CAUTION!
All electrical power and power control wiring must be installed by a qualified electrician, and must comply with local and national regulations for maximum power rating.

All current values are based on 80 kW maximum configuration of the UPS.

Input

Input voltage 3-phase 208V (166-240V)
Input current (nominal, per phase) 244 A
Maximum input current (continuous, at minimum mains voltage) 321 A
Input current protection for mains source or single mains supply (external to UPS, not supplied) 350 A *note 3
Input current protection for bypass source in dual mains configuration (external to UPS, not supplied) 300 A *note 4
Input frequency (programmable) 40-70 Hz

Output

Output voltage (on line) 380 V 3-phase 208V
Output current (nominal) 222 A
Maximum output current (in bypass at 125% overload) 277 A
Neutral output current (with 100% switch mode load) 384 A *note 8
Output current protection (external to UPS, not supplied) 300 A *note 6
Output frequency (programmable) 50/60 Hz, Synchronized to bypass input (if present)

Overcurrent device and disconnect switch for external safety

DC bus voltage (nominal) ±192 V
DC voltage rating of the battery supply 250 V
Maximum available battery supply fault current 18 KA

Notes

Recommended source connection
1 Input electricity to be provided from a dedicated, grounded 4-wire
Wye utility power source with a grounded neutral.

2. Ensure clockwise voltage phase rotation (L1, L2, L3).

Recommended input protection (dual mains configuration)

3. Mains input: 350 Amp 3-Pole AC circuit breaker with 30 kAIC.
4. Bypass input: 300 Amp 3-pole AC circuit breaker with 30 kAIC.

Note: If your installation does not include an Isolation Transformer (optional equipment), use a 350 Amp Class “J” current limiting fuse on each input phase.

Recommended input protection (single mains configuration)

5. Mains input: 350 Amp 3-Pole AC circuit breaker with 30 kAIC.

Note: If your installation does not include an Isolation Transformer (optional equipment), use a 350 Amp Class “J” current limiting fuse on each input phase.

Recommended output (single and dual mains)

6. Output: 300 Amp 3-pole AC circuit breaker with 30 kAIC.

Recommended wiring for a 86°F/30°C temperature environment

7. Mains input wires: 2×4/0 AWG 167°F/75°C rated copper wire (for single and dual mains installation).

Refer to NEC Articles 310-15, 310-16 and 315 for further information.

Neutral output wires: rate for 173% of output phase current if feeding all Switch Mode Power Supply loads without power factor correction.

Ground wires: sized in accordance with NEC Article 250-122 and Table 250-122.

Use Molex lug type (see table) or equivalent and crimp to manufacturer’s specifications.

<table>
<thead>
<tr>
<th>Cable Size (AWG)</th>
<th>Terminal Bolt Diameter</th>
<th>Cable Lug Type</th>
<th>Crimping Tool</th>
<th>Die</th>
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</thead>
<tbody>
<tr>
<td>1/0</td>
<td>M10</td>
<td>LCA1-0-38-X</td>
<td>CT-2001</td>
<td>CD-2001-1/0</td>
</tr>
<tr>
<td>2/0</td>
<td>M10</td>
<td>LCA2-0-38-X</td>
<td>CT-2001</td>
<td>CD-2001-2/0</td>
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<tr>
<td>3/0</td>
<td>M10</td>
<td>LCA3-0-38-X</td>
<td>CT-2001</td>
<td>CD-2001-3/0</td>
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<td>4/0</td>
<td>M10</td>
<td>LCA4-0-38-X</td>
<td>CT-2001</td>
<td>CD-2001-4/0</td>
</tr>
</tbody>
</table>

Full load heat loss at nominal mains

Full load heat loss at nominal mains: 23,743 BTU/hr (6,957 Watts).

7 Checklist

![Warning]

Do not install power or battery modules.

1. Ensure all power wiring is torqued to a minimum of 18.4 lb-in (25 Nm).
2. Ensure that both System Enable Switch and DC Breaker in the Battery Enclosure are in the OFF or STAND-BY position.
3. Apply upstream utility power to the system input and measure the voltage at the input terminal block. Record voltages between:
   Mains input
   L1 and N:______________ L2 and N:______________ L3 and N:______________
   Bypass input
   L1 and N:______________ L2 and N:______________ L3 and N:______________

   Measured voltage must be between 96 and 130. If not, STOP! Verify correct wiring (correct location of N) from the power source to the input wiring connections. Repeat Step 3.
4. Verify A, B, C or RST clockwise phase rotation using a phase rotation meter.
5. Turn on System Enable Switch. Wait 1 minute for system to self test. Ignore display warning (fault light will be on).
6. Test the EPO switch. The System Enable Switch should trip to the STAND-BY position, and the system should shut down completely. If not, check the connections and the EPO switch to ensure that they are installed and functioning correctly.
7. Successful completion of steps 1 through 6 indicates that the UPS wiring is properly installed and functioning correctly. Turn off breakers and switches and shut down utility power to the system input. See Total Power Off procedure in Safety Sheet.
8. Reinstall all wiring access panels on the UPS.

8 Contact Information

For local, country-specific centers: go to www.apc.com/support/contact or see the rear cover of the Operation Manual for phone numbers.