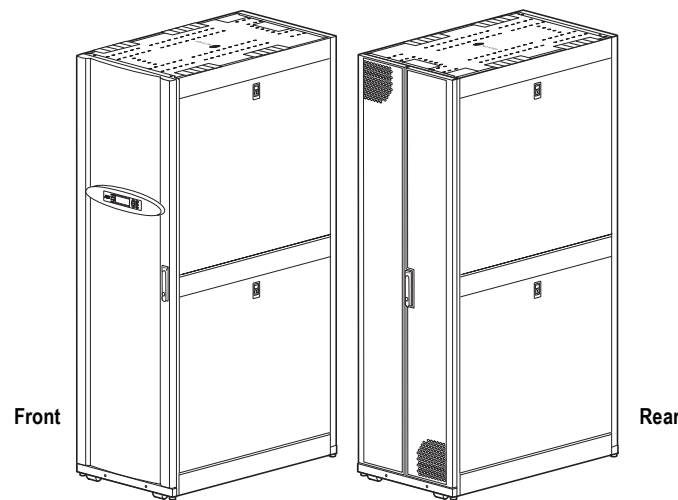


**APC Smart-UPS® VT ISX Enclosure
30-40 kVA 400 V for 5 Battery Modules
with Power Distribution Unit (PDU)**

Installation

**IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS**



Always read the separate Safety Sheet 990-2822 prior to the installation.



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.



The UPS must be supplied from a 380 Y/220 V 4 W + GND 50/60 Hz or 400 Y/230 V 4 W 50/60 Hz or 415 Y/240 V 4 W + GND 50/60 Hz source.



Power terminal lug diameter: minimum 6 mm. Torque value: 7 Nm.

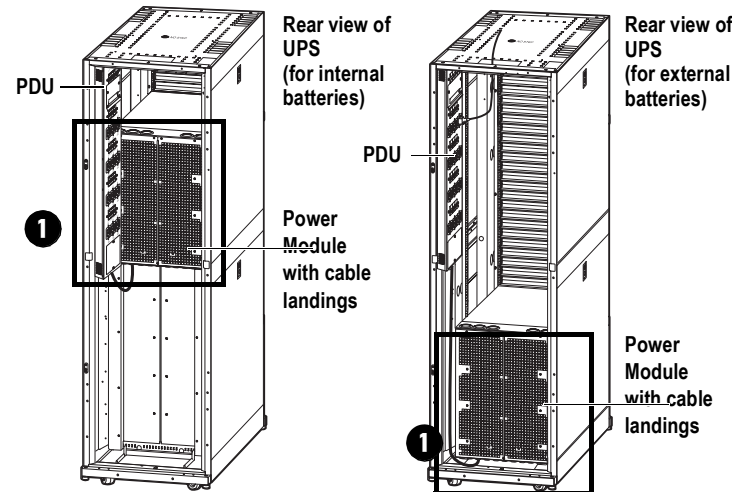
1 Cable Entry



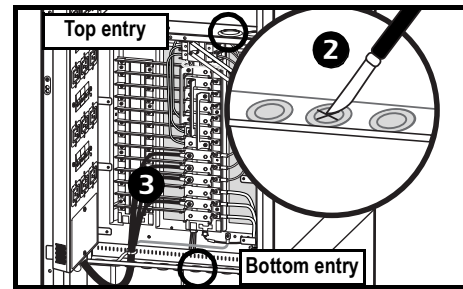
Make sure that the UPS is in its location of use before you start the cabling.

Cable entry takes place from the rear of the UPS. Pull out the lower end of the handle and turn it counterclockwise to a horizontal position to open the door.

Preparing for cabling (general)

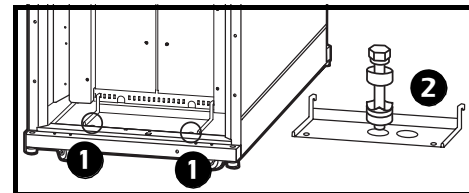


1 Use a torx screwdriver to loosen the 12 M4 screws from the cable landing covers and remove the screws.



2 Cut crosses for cable access in the required number of the blanking plugs (top or bottom as required). Line the holes with grommets.

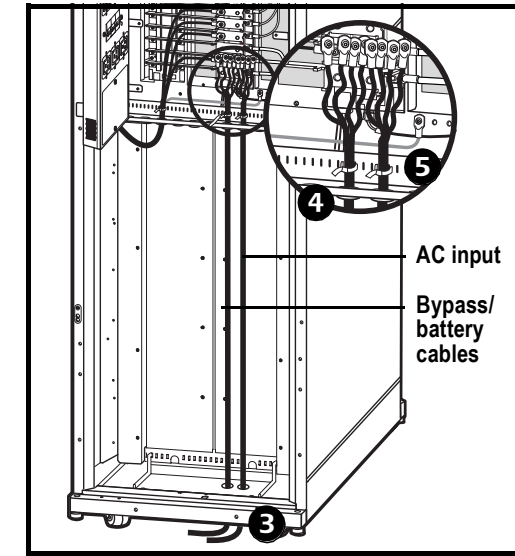
Bottom cable entry



1 Remove the two M4 screws from the bottom plate and remove the plate.

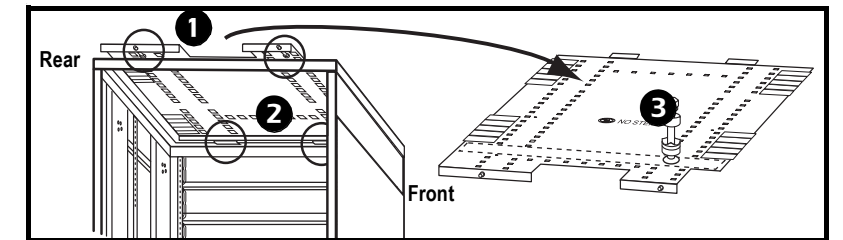
2 Punch holes in bottom plate for cables as required. Line hole(s) with grommets.

Reinstall the plate.

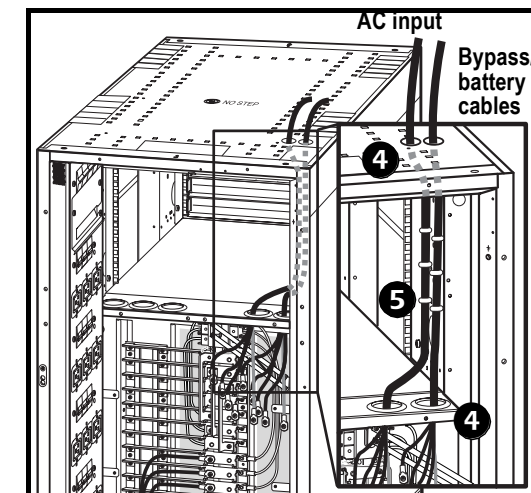


- 3 Guide cable through the bottom holes.
- 4 Feed cables through the blanking plugs into the cable landing area.
- 5 Attach cables to the slotted plate using cable ties (not supplied).

Top cable entry



- 1 From the rear of the inside of the UPS push the spring locks on the top cover backwards and lift up the rear end of top plate.
- 2 Slide out the top plate (mind the wing on either side of the plate).
- 3 Punch hole(s) in the labeled area between the two rails on the rear of the top cover for cables as required. Line the hole(s) with grommets. Reinstall the top plate.

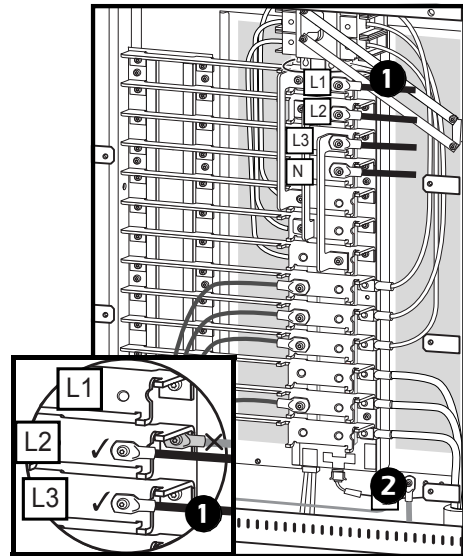


- 4 Feed the cables through the punched holes in the top cover, and guide the cables into the cable landing area.
- 5 Attach the cable to the side panel with cable ties (not supplied).



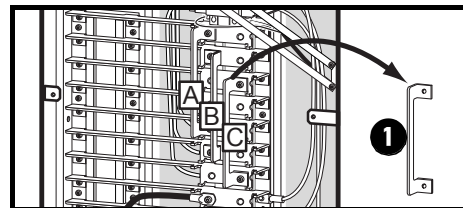
2 AC input and Ground Cable Landings

Single mains

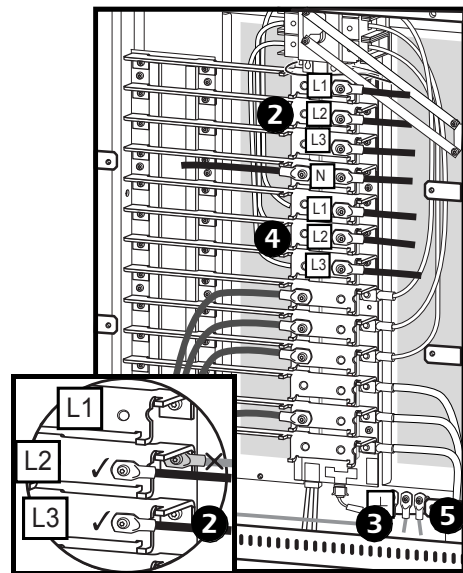


- 1 Connect the AC input cables (L1,L2,L3), and N to the cable landings using a torx screwdriver.
- 2 Connect the ground cable using the provided screw (earth symbol beneath).

Dual mains

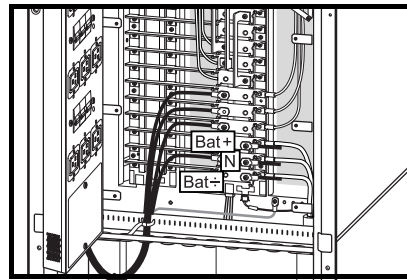


- 1 Remove the two M6 screws from brackets A, B, and C to make the busbars available for dual mains.



- 2 Connect AC input cables (L1, L2, L3) and N to the cable landings using a torx screwdriver.
- 3 Connect the ground cable using the provided screw (earth symbol beneath).
- 4 Connect the bypass cables (L1,L2,L3) and N to the cable landings.
- 5 Connect ground cable.

3 Battery Cabling Landings



- 1 Run the cables as shown under Bottom cable entry/Top cable entry. Connect battery cables Bat+, Bat- and the N cable in the designated areas. Connect ONLY APC SUVTRBX2B6S battery enclosure to the UPS.

4 Connecting Load to the PDU

Preparing to connect the load to the PDU(s)



Note

Connect the load equipment evenly between the 3 phases to avoid overloading the PDU. Total PDU output capacity is about twice the output capability of the UPS. This means that the UPS would be over-loaded if all PDU outlets were loaded to their rating. Load status on the individual phases can be found through the UPS display or through the web interface.



Note

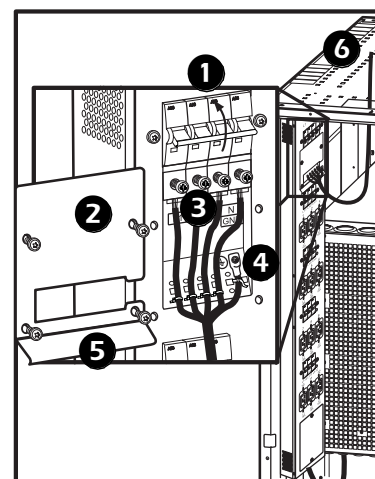
Equipment connected to the 3-phased output may require overcurrent protection with a lower rating than the 3-phased output.



Note

For 3-phased output, the highest current may be in the Neutral conductor at non-linear loads (up to 173%).

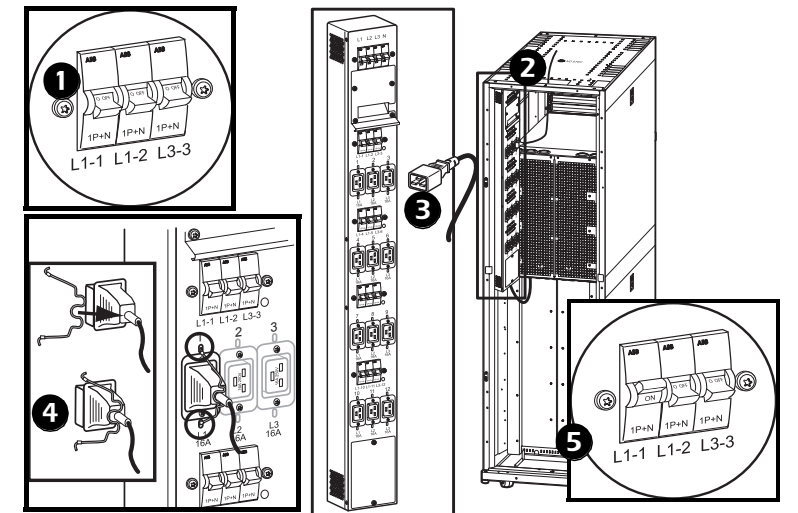
Connecting load to the 3-phased breaker



- 1 Set the PDU breaker to the OFF position.
- 2 Using a torx screwdriver, remove the four M4 screws from the top plate of the PDU. Remove the plate.
- 3 Loosen the M6 screws, and connect L1, L2, L3 and N to the terminals. Tighten the screws firmly. Fasten the cables with cable ties.

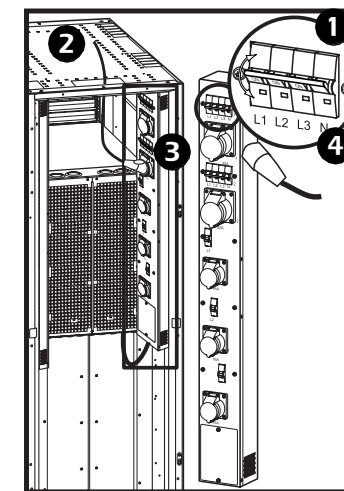
- 4 Attach the ground cable to the stud (labeled Earth) and fasten with a cable tie.
- 5 Use a torx screwdriver to reinstall the top plate removed in step 2.
- 6 Feed the cable through the cable outlet in the top cover.

Connecting 1-phase load to PDU I



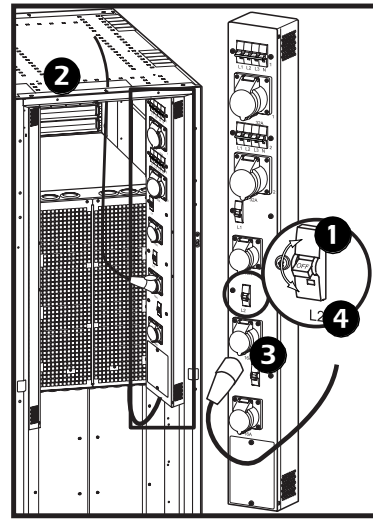
- 1 Set the applicable breaker to the OFF position.
- 2 Guide the load cable down through the top hole.
- 3 Insert the plug from the load into the C19 outlet.
- 4 Secure the plug by inserting the locking brackets.
- 5 Set the applicable breaker to the ON position.

Connecting 3-phase load to PDU II



- 1 Set the applicable breaker set to the OFF position.
- 2 Guide the load cable down through the top hole.
- 3 Lift up the receptacle cover and connect the load to the CEE 32A outlet.
- 4 Set the breaker set to the ON position.

Connecting 1-phase load to PDU II



- 1 Set the applicable breaker to the OFF position.
- 2 Guide the load cable down through the top hole.
- 3 Lift up the receptacle cover and connect the load to the CEE 16A outlet.
- 4 Reset the breaker to the ON position.

Disconnecting the load from the PDU(s)

To disconnect the load, set the applicable breaker(s) to the OFF position.

PDU output breaker ratings

Rear of unit	Ambient temperature in front of unit °C	Nominal breaker rating			
		16	32	40	50
Free exhaust	20	16	32	40	50
Free exhaust	30	14.4	30.4	38	47.5
Free exhaust	40	12.8	27.2	34	42.5
Hot aisle containment	25	14.4	30.4	38	47.5



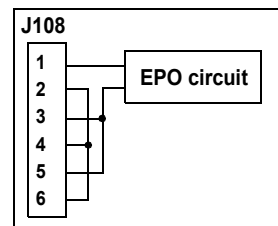
The UPS must be connected to either a dry contact or a 24 V_{DC} EPO switch.

Connect the EPO cable, using one of the following 4 wiring configurations.

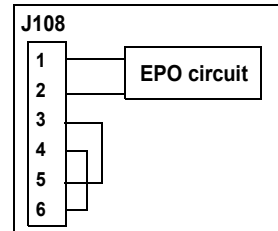


Always follow the pin connection procedures from the top and work down: J106 (8-1), J108 (1-6).

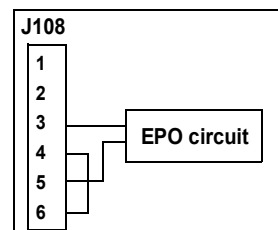
EPO (Emergency Power Off) switch wiring – pin connections J108 (for EPO wiring options)



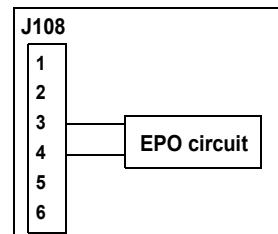
1: Dry Contracts Normally Open
EPO is activated when pin 1 is connected to pins 3 and 5.
Prewired connection 2-4-6, 3-5 and 1 =>



2: +24V Normally Open
EPO is activated when an isolated SELV 24V_{DC} voltage is supplied on pin 1 with reference to pin 2.
Prewired connection 3-5 and 4-6

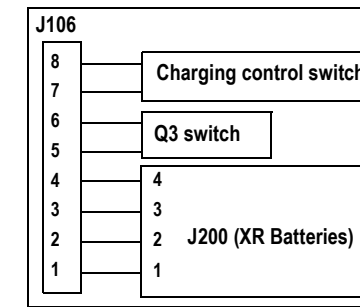


3: Dry Contacts Normally Closed
EPO is activated when a connection from pin 3 to pin 5 is opened.
Prewired connection 4-6.



4: +24V Normally Closed
EPO is activated when a SELV 24V_{DC} voltage removed from pin 3 with reference to pin 4.

Pin connections J106 (UPS)



Pins 1 to 4 are for battery measurement (only applicable to APC XR Battery Enclosures).

Pins 5 and 6 are for external maintenance bypass Q3 (auxiliary switch N/C type). When Q3 is closed, signals are fed back to the UPS controller.

Pins 7 and 8 are for external charge control. When 7 and 8 are closed, the UPS charges batteries with a pre-defined percentage (0-25-50-75-100%) of the maximum charging power. To be used in generator applications, or if special codes requires control of charging. When Q3 is closed, signals are fed back to the UPS controller.

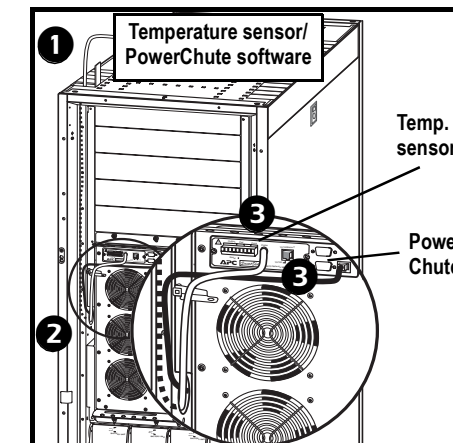


When connecting the Q3 auxiliary signal, use gold-plated N/C auxiliary switch on Q3.



Reinstall cable landing covers.

Connection of APC communication options – PowerChute software and temperature sensor (identical cable routing)



- 1 Feed the cables from optional communication equipment through the opening in the top cover.
- 2 Guide the cables along the inside of the left side panel down to the opening in the power module frame.
- 3 Connect communication equipment where shown.



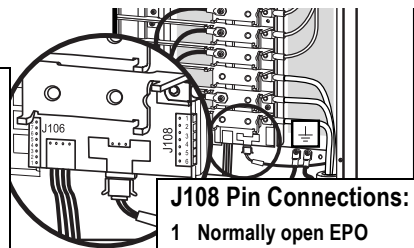
The APC communication options are provided at the front of the UPS.

5 Communication Cables

J106 Pin Connections:

- 8 Ext. charging control return
- 7 External control of charging
- 6 Q3 active return
- 5 Q3 active
- 4 Battery measurement supply*
- 3 Battery unit quantity*
- 2 Max. battery temperature*
- 1 Battery measurement return*

* Should be used with APC XR Enclosures



J108 Pin Connections:

- 1 Normally open EPO
- 2 Normally open EPO return
- 3 Normally closed EPO
- 4 Normally closed EPO return
- 5 +24V SELV supply
- 6 SELV ground

6 Specifications

UPS ratings	30 kVA			40 kVA		
Input voltage/Bypass voltage (V) per phase	380	400	415	380	400	415
Input current (nominal) (A)	38.6	36.7	35.3	51.7	49.1	47.3
Maximum input current (continuous, at minimum mains voltage)/per phase	42.5	40.3	38.9	56.8	54.0	52.1
Input frequency (Hz) range	40-70	40-70	40-70	40-70	40-70	40-70
Output voltage (on line) (V). Minimum and maximum values (±1%)	3x380	3x400	3x415	3x380	3x400	3x415
Output current (nominal) (A)	45.6	43.3	41.7	60.8	57.7	55.6
Maximum output current (in bypass only at 110% overload per phase)	50.1	47.6	45.9	66.9	63.5	61.2
Neutral output current (with 100% switch mode load) (A)	75	75	75	100	100	100
DC overcurrent protection (A) and disconnect switch for external safety	66	66	66	88	88	88
DC voltage rating of the battery supply	± 192	± 192	± 192	± 192	± 192	± 192
Maximum available battery short-circuit current	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA

Recommended current protection

To ensure the correct functionality of the PDU and to avoid unintentional tripping of the bypass input protection device follow this recommendation:

Dual/single mains configurations	Connection	30 kVA	40 kVA	Notes
Single	Mains/Bypass	SUVTOPT110	SUVTOPT111	
Dual	Mains	SUVTOPT110 or 60 A breaker/fuse (30 kAIC)	SUVTOPT111 or 80 A breaker/fuse (30 kAIC)	1, 2
Dual	Bypass	SUVTOPT110	SUVTOPT111	

Output protection is included in the PDU of the unit.

Note 1: Be aware that for single mains this is also the mains input protective device.

Note 2: Using a solution solely based on the above breakers, selectivity for load short circuit currents higher than 2 kA is not assured for the 3-phased output. If this is required use the below specified overcurrent protection of the bypass input.

If fuses are preferred, the following can be used:

UPS size	Breaker/fuse
30 kVA version 400 V input voltage	63 A Class gG fuse ABB S703-K63 breaker
40 kVA version 400 V input voltage	80 A Class gG fuse ABB S703-K80 breaker

If another input protection is required select one with a maximum rating as follows:

UPS size	Breaker/fuse
30 kVA version 400 V input voltage	63 A
40 kVA version 400 V input voltage	80 A

Ensure that the short-circuit current on the UPS input is less than 14AiC sym RMS. Also take into consideration the below breaker settings to ensure correct functionality during overload operation.



Choice of breakers/fuses other than APC SUVTOPT needs complete selectivity assessments.

Minimum breaker settings

30kVA	Internal fault	800% overload bypass operation	150% overload normal/battery operation	125% overload normal/battery operation	Continuously
Mains input	3 kA	–	–	–	49.2 A
Bypass input	2.3 kA	365 A	–	–	50.1 A
Output	14 kA	365 A	68.4 A	57 A	50.1 A
Duration	<10 ms	500 ms	30 s	60 s	∞
Notes	1				

40kVA	Internal fault	800% overload bypass operation	150% overload normal/battery operation	125% overload normal/battery operation	Continuously
Mains input	3 kA	–	–	–	65.6 A
Bypass input	2.3 kA	487 A	–	–	66.9 A
Output	14 kA	487 A	91.2 A	76 A	66.9 A
Duration	<10 ms	500 ms	30 s	60 s	∞
Notes	1				

Note 1: For the output value, the short-circuit level is indicated.

Recommended phase-conductor sizes for a 30°C temperature environment

UPS [mm²] sizes	Mains input [mm²]	AC output [mm²]	DC input [mm²] 70°C Wire
30kVA	16	16	35
40kVA	25	25	50

7 Checklist

- Do not apply electricity to the UPS.
- Do not connect batteries in the UPS.
- If an XR Battery Enclosure is installed make sure that the DC breaker (if available) is in the OFF position and that both 125 A fuses are removed from the XR Battery Enclosure.
- Check that the power wiring is torqued to 7 Nm.
- Verify clockwise phase-rotation (L1, L2, L3) and make sure a neutral connection is present.
- If the installation includes an XR Battery Enclosure, remount the 125 A fuses in the XR Battery Enclosure and check that the DC breaker (if available) on the XR Battery Enclosure is in the ON position.
- Leave a wiring diagram on site for service personnel.
- Close the rear door.
- For any optional equipment, refer to product-specific manuals.

8 Contact Information

If a problem occurs, phone our Ireland office at +353 91 70 2000 or go to Web Support: support@apc.com. For country-specific centers: go to www.apc.com/support/contact.