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 four M4 screws from the cable landing cover and remove.

Preparing for bottom and top entry

1. Use a hammer to punch out knockouts and line holes with grommets (not supplied).
2. Connect the ground cable using the provided screw (earth symbol beneath the applicable screw).
3. Connect the input cables (L1, L2, L3), to the cable landings.
4. Use cable ties to attach the cables to the slotted plate.
5. Feed the input cables in conduits (not supplied) through the punched holes in the bottom plate.

Reinstall bottom cable landing cover.

AC and Ground Cable Landings

Bottom cable entry

1. From the rear of the inside of the UPS push the top cover spring locks backwards to lift up the rear end of the top cover.
2. Slide out the top cover (mind the wing on either side of the plate).
3. Punch holes in labeled area between the two rails on the rear of the top cover for conduits as required. Line hole(s) with grommets (not supplied). Reinstall the top plate.

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

Note: Power terminal lug diameter: minimum 6 mm. Torque value: 62 lbf/in/7 Nm.
3 Battery Cable Landings

The UPS may ONLY be connected to the APC SUVTBXR Battery Enclosure.

3 Battery Cable Landings

**Top cable entry**

1. Feed the input cables in conduits (not supplied) through the punched holes.
2. Run the cables in the side panel.
3. Guide the input cables through the punched holes in the bottom plate up to the cable landing.
4. Use cable ties to attach the cables to the slotted plate.
5. Connect the input cables (L1, L2, L3) to the cable landings.
6. Connect the ground cable using the provided screw (earth symbol beneath applicable screw).
7. Reinstall bottom cable landing cover.

4 Connecting Load to the PDU

**Preparing to connect the load to the PDU(s)**

Connect the load equipment evenly between the 3 phases to avoid overloading the PDU. The total output capacity of the PDU is approximately twice the output capability of the UPS. This means that 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.

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

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

**Connecting load to the 4-pole breaker**

1. Set the top PDU breaker to the OFF position.
2. Using a torx screwdriver, remove the four M4 screws from the top plate of PDU. Remove plate.
3. Connect the L1, L2, L3, N to the terminals and tighten the M6 screws firmly. Fasten cables with cable ties.
4. Attach the ground cable to the ground stud (labeled earth) and fasten with cable tie.
5. Use a torx screwdriver to reinstall the top plate removed in step 2.
6. Feed the cable through the hole in the top cover.

**Connecting load to the 3-pole breaker(s)**

1. Set the applicable breaker to the OFF position.
2. Insert the plug from the load into the receptacle. Secure the plug by turning it clockwise approximately 30°.
3. Set the applicable breaker to the ON position to supply the load.
Dissecting the load from the PDU(s)

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

**PDU output breaker ratings**

<table>
<thead>
<tr>
<th>Rear of unit</th>
<th>Ambient temperature in front of unit °C</th>
<th>Nominal rating of breaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free exhaust</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>Free exhaust</td>
<td>30</td>
<td>16</td>
</tr>
<tr>
<td>Free exhaust</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>Hot aisle exhaust</td>
<td>25</td>
<td>16</td>
</tr>
</tbody>
</table>

The UPS must be connected to either a dry contact or a 24 VDC EPO switch.

- +24V Normally Open
- +24V Normally Closed
- Dry Contacts Normally Closed
- Dry Contacts Normally Open

**Note**

Disconnecting the load from the PDU(s)

- To disconnect the load, set the applicable breaker to the OFF position.
- 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)**

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

1. **Dry Contacts Normally Open**
   - EPO is activated when pin 1 is connected to pins 3 and 5.
   - Prewired connection 2-4, 3-5 and 1-8.

2. **+24V Normally Open**
   - EPO is activated when an isolated SELV 24VDC 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 24VDC voltage removed from pin 3 with reference to pin 4.

**Note**

- When connecting the Q3 auxiliary signal, use gold-plated N/C auxiliary switch on Q3.
- Do not connect any circuits to the EPO terminal block unless it can be confirmed that the circuit is a NEC Class 2 circuit.
- Use only 28-16 AWG copper wire for the connection of the EPO switch and other optional equipment. Keep all other wiring and uninsulated live parts separate of other NEC Class 2 circuits.

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

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

**Note**

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

**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.

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**Communication Cables**

- Emergency Power Off (EPO) switch must be connected to a NEC Class 2 circuit.
- Use only 28-16 AWG copper wire for the connection of the EPO switch and other optional equipment. Keep all other wiring and uninsulated live parts separate of other NEC Class 2 circuits.
- Do not connect any circuits to the EPO terminal block unless it can be confirmed that the circuit is a NEC Class 2 circuit.
- Remove top cable landing covers as described under Battery Cable Landings, top entry.

**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

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**Smart-UPS® VT ISX w/transformer and PDU, 20-30 kVA, 480 V, Installation**

- **Smart-UPS® VT ISX w/transformer and PDU, 20-30 kVA, 480 V, Installation**
6 Specifications

UPS ratings 20 kVA 30 kVA
Input voltage / Bypass voltage (V) per phase 480 480
Input current (nominal) (A) 25.5 36.8
Input frequency (Hz) range 60 60
Output voltage (on line) (Vac) 3x208/120 3x208/120
Minimum and maximum values (< 1%) 55.5 83.3
Output current (nominal, per phase) (A) 55.5 83.3
Neutral output current (with 100% switch mode load) (A) 37.5 56.7

Minimum breaker settings

<table>
<thead>
<tr>
<th>UPS size</th>
<th>Mains input</th>
<th>Bypass input</th>
<th>Duration</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 kVA</td>
<td>4 kA</td>
<td>2.3 kA</td>
<td>&lt;10 ms</td>
<td>1</td>
</tr>
<tr>
<td>30 kVA</td>
<td>5 kA</td>
<td>4.2 kA</td>
<td>&lt;10 ms</td>
<td>1</td>
</tr>
</tbody>
</table>

Recommended phase-conductor sizes [AWG] for a 86°F (30°C) temperature environment

<table>
<thead>
<tr>
<th>Cable Size [AWG]</th>
<th>Cable Lug Type</th>
<th>Crimping Tool</th>
<th>Die</th>
<th>Terminal Bolt Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>YA6CL2TC38</td>
<td>MD7-34R</td>
<td>W5CVT</td>
<td>0.2 in/6 mm</td>
</tr>
<tr>
<td>4</td>
<td>YA4CL2TC38</td>
<td>MD7-34R</td>
<td>W4CVT</td>
<td>0.2 in/6 mm</td>
</tr>
<tr>
<td>1</td>
<td>YA1CL2TC38</td>
<td>MD7-34R</td>
<td>W1CVT</td>
<td>0.2 in/6 mm</td>
</tr>
</tbody>
</table>

Note 1: Use Molex lug type or equivalent, and crimp to manufacturer’s specifications.

At 100% non-linear load (EN50091-3 standard), the neutral shall be rated for 173% phase current.

Recommended current protection

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

Use the SUVT114 (20 kVA version) or the SUVT115 (30 kVA version) as input protection.

Output protection is included in the PDU of the unit.

Note: Use a solution solely based on breakers, selectivity for load short circuit currents higher than 2 kA cannot be assured for the 3-phased output. If this is required, use fuses to protect the bypass.

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 62 lbf/in/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 Customer Support at (1) (800) 800-4272 (US and Canada). For country-specific centers: go to www.apc.com/support/contact. Web Support: write to support@apc.com