AEC

MODULAR ONLINE UPS · THREE-PHASE 480 V, 3-WIRE

# INFINITE 480 V 80–200 kVA

## Quick Installation Guide

From delivery to normal operation: place the cabinet, wire it, connect the battery and start it from the touchscreen. Qualified electricians only; an engineer approved by AEC commissions the UPS.

INFINITE 80 kVA | 100 kVA | 135 kVA | 160 kVA | 200 kVA

AEC-QG-INF-US · REV. A · NOVEMBER 2026



## 1 Safety first

IMPORTANT SAFETY INSTRUCTIONS — SAVE THESE INSTRUCTIONS. Do not put the UPS into service until an engineer approved by AEC has commissioned it.

**⚠ DANGER**

- **Lethal voltage.** 480 V AC at the UPS terminals; the battery string is 360 to 600 V DC (lead-acid) or 384 to 640 V DC (lithium). Battery terminals stay live when the UPS is off.
- Never install or remove cables while the equipment is energized. With all external power off, the internal capacitors and the output bus bars can still be live: wait 10–15 minutes, then check with a meter.
- Remove watches, rings and other conductive items. Use insulated tools rated for the voltage.

**⚠ WARNING**

- Only qualified personnel install the UPS, to NFPA 70 (NEC) and local codes. Wear PPE and arc-flash protection as required by NFPA 70E.
- Ground the cabinet before any other connection; connect the grounding conductor first.
- Do not swap the ground conductors, the line conductors and the parallel connection points: this causes a short circuit.
- Check the battery polarity before you connect. Never short-circuit the battery terminals.

## 2 Check the delivery and the site

1. Before you unpack, check the crate for damage and the model on the label (Figure 2-1). If the crate is damaged or the model is wrong, do not unpack: report it to the carrier and call AEC.
2. Unpack as close as possible to the installation site.
3. Check the accessories against the packing list. Record any damage at once and call AEC.

**The site and the supply.**

- Indoors (IP20): 32 to 104 °F (0 to 40 °C), 0 to 95 % relative humidity, non-condensing; up to 6,562 ft (2,000 m); the cabinet vertical within 5°. Battery at 68 to 86 °F (20 to 30 °C) for the best life.
- No water, heat sources, flammable or explosive materials, direct sunlight, dust, corrosive gases, salt air or conductive dust.
- A level, solid floor that carries the cabinet (Table 2-2).
- Supply: 480 V three-phase, **3-wire + PE** (no neutral), 60 Hz; utility input range 336 to 552 V line to line. No ground-fault (residual-current) trip on the UPS feeds.

- Air enters at the front and leaves at the top; all cables enter from the top. Clearances in Table 2-1.

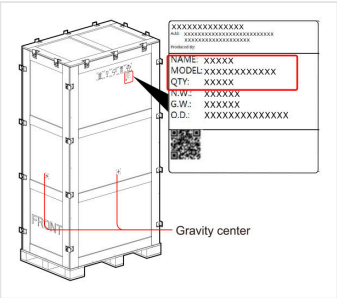



FIGURE 2-1 Model label and center-of-gravity mark on the crate




FIGURE 2-2 Clearances — A front, B rear and sides, C above

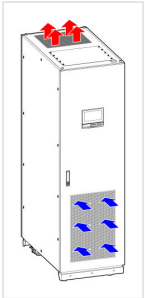


FIGURE 2-3 Air flow: front in, top out

TABLE 2-1 Clearances

| | Minimum |
|---|---|
| A — front | **At least 36 in (914 mm), NEC 110.26(A)(1)** at 480 V (3.5 ft or 4 ft for Conditions 2 and 3); 31.5 in (800 mm) for operation. The door must open 90°. |
| B — rear and sides | 0: all access is from the front. |
| C — above | 19.7 in (500 mm): air exhaust and top cable entry. |

TABLE 2-2 Weight and size

| | 80 kVA | 100 kVA | 135 kVA | 160 kVA | 200 kVA |
|---|---|---|---|---|---|
| Power modules, standard + redundant slot | 1 + 1 | 1 + 1 | 2 + 1 | 2 + 1 | 2 + 1 |
| Cabinet without power modules | 288 lb (131 kg) | 288 lb (131 kg) | 308 lb (140 kg) | 308 lb (140 kg) | 308 lb (140 kg) |
| With standard modules | — | 452 lb (205 kg) | — | — | 591 lb (268 kg) |

Size W × D × H: 23.62 × 39.37 × 81.42 in (600 × 1,000 × 2,068 mm) with eye bolts and casters.

## 3 Place the cabinet

**⚠ CAUTION**

Only trained personnel move the cabinet. Keep it upright, tilted no more than 15°, with the center of gravity between the forks. Insert the forks from the **side**; the fork tips must stick out more than 7.87 in (200 mm) (Figure 3-1). To lift with a crane, fit the four M12 eye bolts supplied in place of the four top corner screws, and use slings at 90° or less — never tie ropes around the cabinet.

1. Remove the screws of the front and rear L-angles that hold the cabinet to the pallet (M12, 10 pieces) and remove the L-angles (Figure 3-2).
2. Remove the four wooden blocks that support the cabinet on the pallet.
3. Lift the UPS off the pallet with a forklift and set it on the floor (Figure 3-3).
4. Push the UPS on its casters to its place.
5. Set the caster brakes, then lower the leveling feet until they stand firmly on the floor and the cabinet is level (Figure 3-4).
6. Fit the options now, if ordered (seismic kit, SNMP-L card, expansion card, parallel kit, surge protection kit, single power source kit): see the user manual, section Installing the options.

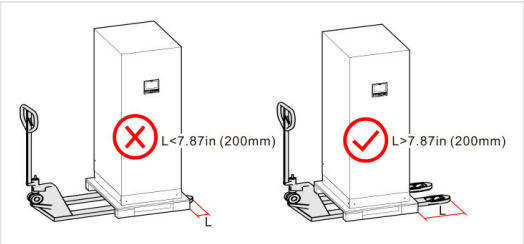



FIGURE 3-1 Forks from the side: tips out more than 7.87 in (200 mm) (right), not less (left)

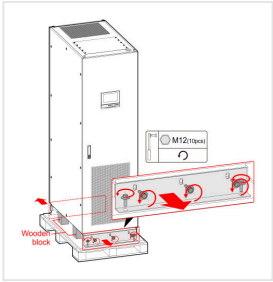



FIGURE 3-2 Step 1: L-angles (M12 × 10)

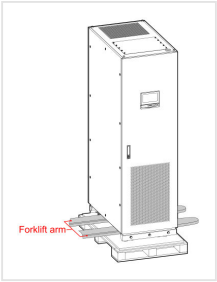



FIGURE 3-3 Step 3: off the pallet

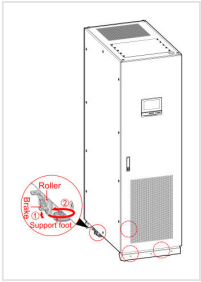



FIGURE 3-4 Step 5: brakes (1), feet (2)

## 4 Wire the power

Before you connect, check that the utility, bypass and output switches of the UPS, the external maintenance bypass switch and the external battery switch are all OFF (Figure 4-1), and lock out the upstream breakers.

TABLE 4-1 External breakers (3-pole, 500 V AC / 600 V DC) and minimum copper conductors to NEC, 75 °C

| Circuit | 80 and 100 kVA | 135, 160 and 200 kVA |
|---|---|---|
| Utility, bypass, output, maintenance bypass | 200 A · 3/0 AWG · ground 6 AWG | 400 A · 2 × 3/0 AWG or 600 kcmil · ground 3 AWG |
| Battery, 40 blocks | 250 A DC · 250 kcmil · ground 4 AWG | 500 A DC · 2 × 250 kcmil · ground 2 AWG |
| Battery, 30 blocks | 80 kVA: 250 A DC · 250 kcmil<br>100 kVA: 300 A DC · 350 kcmil · ground 4 AWG | 135, 160 kVA: 500 A DC · 2 × 250 kcmil · ground 2 AWG<br>200 kVA: 600 A DC · 2 × 350 kcmil · ground 1 AWG |
| Maximum current (utility input / output) | 112 / 96 A · 137 / 120 A | 193 / 162 A · 224 / 193 A · 274 / 241 A |

**i NOTE** Every AC breaker is at least 125 % of the continuous current (NEC 215.2, 215.3). Conductors: up to three in a raceway, 86 °F (30 °C) ambient; parallel conductors 1/0 AWG or larger (NEC 310.10(G)). The neutral is not used. Do not share one AC breaker between several UPS, and connect no load between the UPS and its breaker. With AEC L6 lithium cabinets, size the battery cables to the NEC and the L6 manual. The installer's calculation prevails.

1. Open the front door with the key (Figure 4-2).
2. Check again that the input, output and bypass switches are OFF. Remove the top wiring cover plate and the front wiring cover plate (M6, 14 pieces) (Figure 4-3).
3. Drill the cable holes in the top cover plate for your conduits (hole plans in the user manual).
4. Refit the drilled top plate (M6, 10 pieces, 40 lb-in / 4.5 N·m) and fit the conduits. Pull the utility, bypass, output, battery + and – and ground cables through their holes (Figure 4-4).
5. Crimp lugs on the cables. Strip the cables **outside** the cabinet, so that nothing falls inside.
6. Connect **PE first**, to the grounding bar at the right of the terminal area.
7. Connect the utility input, bypass input and output cables to their bus bars, L1 · L2 · L3 left to right seen from the front (Figure 4-5, Figure 4-6). Mount the lugs straight along the bus bars and tighten the bolts.
8. Connect the battery cables (Step 5) and the communication cables, then refit the front wiring cover plate (M6, 4 pieces, 40 lb-in / 4.5 N·m) and close the door.

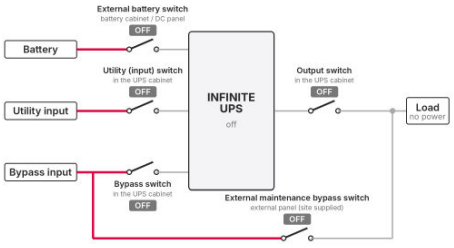



FIGURE 4-1 Before you connect: all switches OFF

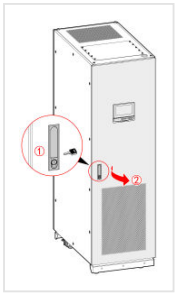


FIGURE 4-2 Step 1: open the door

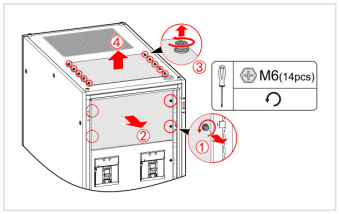



FIGURE 4-3 Step 2: top and front cover plates

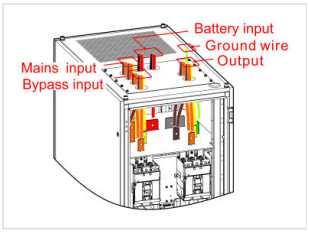
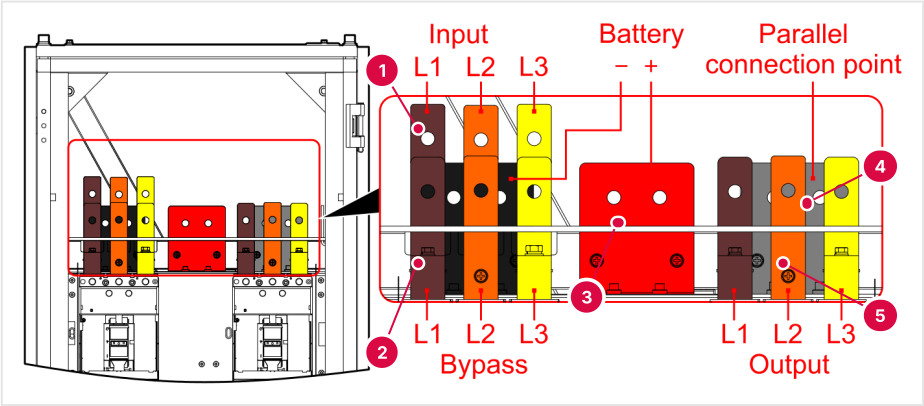
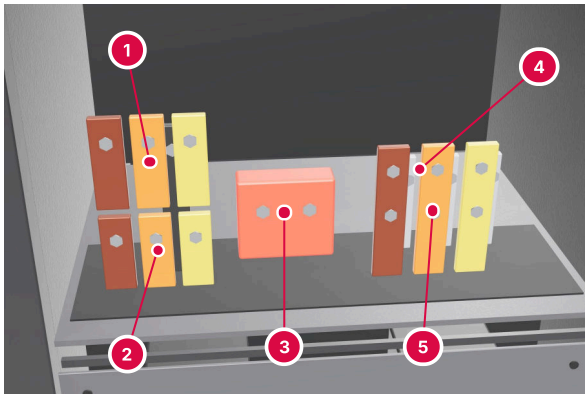



FIGURE 4-4 Step 4: utility, bypass, battery, ground, output cables in from the top




1. Utility input L1, L2, L3 (short bars, front)
2. Bypass input L1, L2, L3 (long bars, behind)
3. Battery – (left hole) and battery + (right hole)
4. Parallel connection point (parallel systems only)
5. Output L1, L2, L3

FIGURE 4-5 Bus bars behind the front wiring cover



1. Utility input L1 · L2 · L3
2. Bypass input L1 · L2 · L3
3. Battery – (left hole) and battery + (right hole)
4. Parallel connection point
5. Output L1 · L2 · L3

FIGURE 4-6 Illustration: terminal order seen from the front, 200 kVA cabinet · M10 bolts, standard M10 torque

**CAUTION**

The UPS leaves the factory for **dual input** (separate utility and bypass sources). When one source feeds both, fit the single power source kit and connect the grid L1, L2 and L3 to the **utility** bus bars only; leave the bypass bus bars without cables. Do not apply fire-stop sealant inside the cabinet.

**NOTICE**

Terminal bolts are M10 (user manual Table 4-4). Tighten them to the standard M10 torque.

## 5 Connect the battery

INFINITE takes an external battery, without neutral or midpoint: lead-acid (30 to 50 blocks of 12 V; full rating from 40 blocks) or AEC L6 lithium cabinets.

### Lead-acid battery

1. Install a 3-pole DC disconnect — the external battery switch — between the battery and the UPS, rated as in Table 4-1. Leave it OFF.
2. Measure the battery voltage and polarity with a voltmeter: above 11.5 V × the number of blocks (above 460 V for 40 blocks).
3. Connect the battery + and – cables, through the external battery switch, to the battery bus bars (Figure 4-5, item 3; Figure 5-1). Tighten all terminals.
4. Wire the auxiliary contact of the battery switch to an input dry contact of the system monitoring card. AEC service sets that input at commissioning.

### AEC L6 lithium battery cabinets (with BMS)

1. Install and wire the L6 cabinets as described in the **L6 Lithium Battery Cabinet Quick Installation Guide, AEC-QG-L6-US**.
2. Connect the positive and negative terminals of the L6 system to the battery + and – bus bars of the UPS (Figure 4-5, item 3). The L6 N busbar stays unconnected.
3. Fit the BMS expansion card in slot 1 of the system control box: remove the two M3 screws and the slot cover, slide the card in and fix it with the two screws (8 lb-in / 0.9 N·m) (Figure 5-2).
4. Connect an RJ45 cable from the BMS port of the card (Figure 5-3, item 1) to the RS485 port of the L6 master cabinet.
5. At commissioning, AEC service sets **Expansion card mode** = BMS, **Battery type** = Li-ion (BMS) and **BMS communication function** = On (**Setting manage › Cabinet setting**).

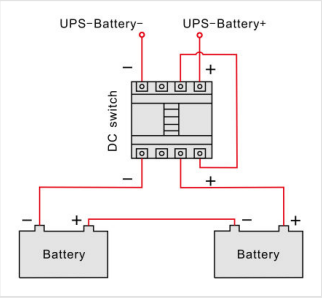



FIGURE 5-1 Battery wiring through the external DC switch

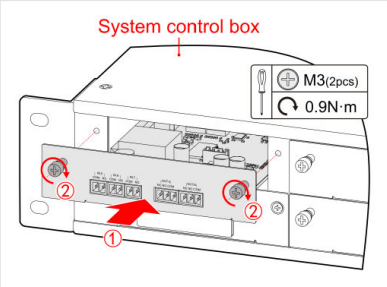
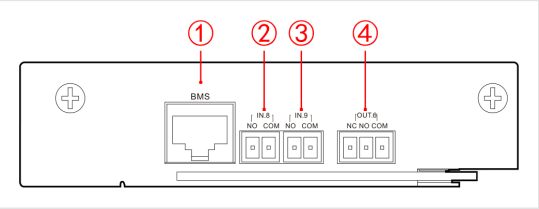



FIGURE 5-2 Fitting a card in slot 1 (8 lb-in / 0.9 N·m)




1. BMS port, RJ45: to the RS485 port of the L6 master
2. IN.8 (NO, COM): can be set to prohibit charging
3. IN.9 (NO, COM): can be set to prohibit discharging
4. OUT.6: reserved

FIGURE 5-3 BMS expansion card

## 6 Start the UPS

At the first start, the AEC engineer commissions the UPS. The start-up password is reserved to AEC service.

Check before power-on:

- The utility, bypass and output switches and the external battery switch are OFF (Figure 4-1). The installation checklist of the user manual is complete.
- The load is switched off, is not inductive (no motors, fans or air conditioners fed directly) and does not exceed the UPS rating.
- No short circuit at the UPS input or output, line to line or line to ground.
- Utility input: 336 to 552 V line to line, 40 to 70 Hz. Battery: above 11.5 V × the number of blocks, correct polarity.

1. Set the ready switches of the bypass module and of every power module to **locked** (red) (Figure 6-3, item 5).
2. Close the **bypass switch**, the **utility (input) switch** and the **external battery switch**, in this order (Figure 6-1). The touchscreen starts and the UPS feeds its output terminals through the bypass. The output switch stays OFF.
3. Enter the start-up password. Touch the **Current fault** icon and check that there is no fault (Figure 7-1, item 5). If there is one, stop and call AEC service.
4. Wait until the RUN indicators of all power modules flash slowly green.
5. Hold the **ON** key pair on the operation panel for 3 s (Figure 7-2, item 7) — or touch **Inverter ON/OFF**, then **Single ON**. The DC/AC indicator turns green; after about 10 s the bypass indicator goes off and the main page shows **Inverter output** (Figure 7-1).
6. Close the **output switch** (Figure 6-2).
7. Switch on the loads, the largest first, then the smaller ones.

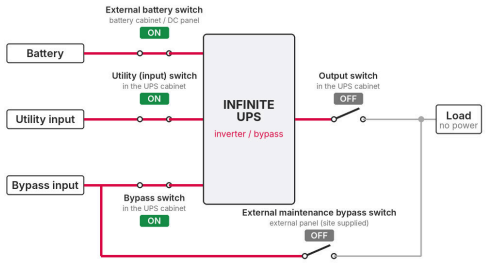



FIGURE 6-1 Step 2: bypass, utility and battery switches ON, output switch OFF

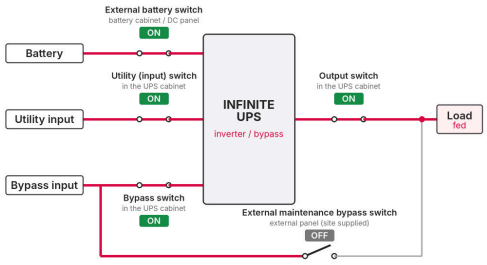
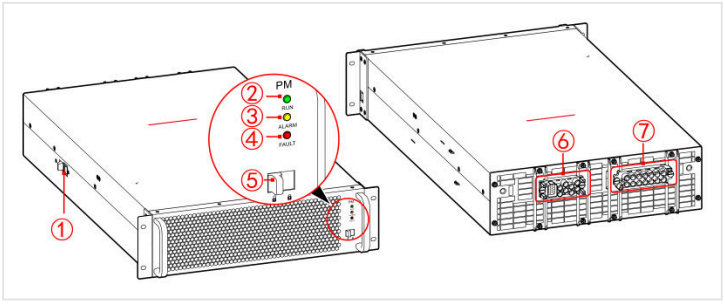



FIGURE 6-2 Step 6: output switch ON — normal operation




2. **RUN** indicator, green. Slow flashing: ready. On: inverter state.
3. **ALARM** indicator, yellow
4. **FAULT** indicator, red
5. **Ready switch.** Red: locked — set before start-up. Green: unlocked, the module can be removed.

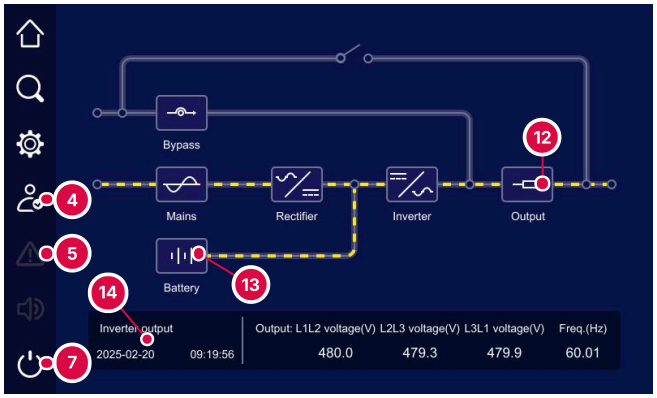
FIGURE 6-3 Power module, front (left) and rear (right)

## 7 Set and check

1. Log in with the **Login** icon (Figure 7-1, item 4) and the password given by AEC at commissioning.
2. Touch **Setting manage › Screen setting › Time setting**. Set the time zone (US Eastern UTC−5, Central UTC−6, Mountain UTC−7, Pacific UTC−8), the date and the time — or NTP synchronization. Touch **Save**.
3. Touch **Setting manage › Password setting**. Change the password and record it in the installation record of the user manual.

4. On the main page touch the output icon (Figure 7-1, item 12). Check that the output voltage between L1, L2 and L3 is within ±2 V and the frequency within ±0.1 Hz of the set values (480 V, 60 Hz). Check also with a meter.

**i NOTE** The cabinet settings — output voltage and frequency, parallel mode, battery type, capacity and cell number, BMS communication — are view-only for the user and are set by AEC service at commissioning. They must match the battery installed.




| | |
|---|---|
| 4 | Login |
| 5 | Current fault: red when a fault is present |
| 7 | Inverter ON / OFF |
| 12 | Output: output readings |
| 13 | Battery: battery readings |
| 14 | State bar: UPS state, date and time |

FIGURE 7-1 Main page in normal operation — Mains inverter output




| | |
|---|---|
| 2 | AC/DC (rectifier) indicator |
| 3 | DC/AC (inverter) indicator |
| 4 | Bypass indicator |
| 7 | ON key pair (hold 3 s) |
| 8 | OFF key pair (hold 3 s) |
| 9 | Status light bar |

FIGURE 7-2 Operation panel on the front door

**Check that the UPS is in normal operation:** the state bar shows **Mains inverter output** and the power path runs utility → rectifier → inverter → output (Figure 7-1); the AC/DC and DC/AC indicators are green; the status light bar is blue; the **Current fault** icon is not red.

## 8 Shut down and maintenance bypass

**Shut down the UPS.** With a normal bypass, the load stays on the bypass when the inverter stops; with an abnormal bypass the output goes off. Switch the loads off first.

1. Switch off the loads.
2. Hold the **OFF** key pair for 3 s — or touch **Inverter ON/OFF**, then **Single OFF**. The bypass indicator turns green: bypass output.
3. To power the UPS down completely, open the **external battery switch**, the **utility switch**, the **bypass switch** and the **output switch**, in this order (Figure 4-1). Wait 10–15 minutes and check with a meter before you open covers.

**Transfer to the external maintenance bypass** — to service the UPS without cutting the load.

1. Stop the inverter (OFF key pair, 3 s). The system is in bypass output.
2. Check again that the inverter is off. Close the **external maintenance bypass switch** (Figure 8-1).
3. Open the **external battery switch**, the **utility switch**, the **bypass switch** and the **output switch**, one by one (Figure 8-2).
4. Wait until the touchscreen and the indicators are off. After 10–15 minutes you can work on the UPS — check with a meter first.

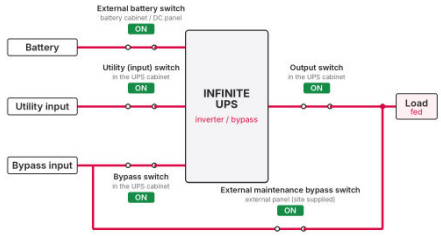



FIGURE 8-1 Step 2: maintenance bypass switch ON, all other switches still ON

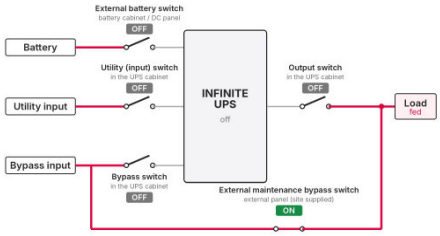



FIGURE 8-2 Step 3: only the maintenance bypass switch ON — the UPS is isolated

**DANGER**

On maintenance bypass, **never close the output switch** of the UPS. The load side of the output switch and the output conductors are live.

**Return to the inverter** (check first that the bypass input is normal)

1. Close the **bypass switch**, then the **utility switch**.
2. Set the ready switch of the bypass module to **locked**. Check that the touchscreen does not show “Not allow to connect battery”, then close the **external battery switch**.
3. Close the **output switch** (Figure 8-1).
4. When the bypass indicator is green, open the **external maintenance bypass switch** (Figure 6-2).
5. Set the ready switches of all power modules to **locked**.
6. When the RUN indicators flash slowly green, hold the **ON** key pair for 3 s. The system goes to inverter output.

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Options, parallel and BSC systems, settings, alarms, maintenance and every detail: INFINITE 480 V 80–200 kVA User Manual, AEC-UM-INF-US (aecups.com · AEC app › Support › Downloads).