AEC

SPLIT-PHASE ONLINE UPS · 120/240 V · RACK / TOWER

FERRUS SP RT 6–10 kVA

Quick Installation Guide

From delivery to normal operation: rack mounting, wiring, BAT16192RT battery packs and start-up. Qualified electricians only. Read every safety message.

FERSPRT6000-16X9 · FERSPRT10000-16X9 · BAT16192RT battery pack

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



1 Safety first

Read these messages before you start. Keep this guide and the user manual near the UPS.

⚠ DANGER

Hazardous voltage. Each BAT16192RT battery pack is a 192 V DC string: this voltage is lethal. The battery circuit is not isolated from the utility input, and with the input breaker open the internal circuits stay connected to the batteries. Before you move or rewire the UPS, open the input breaker and every pack breaker, and wait at least 10 minutes for the internal capacitors to discharge.

⚠ WARNING

Qualified electricians only. The UPS is hardwired. Install it to the National Electrical Code (NFPA 70) and local codes. Switch off and lock out the utility supply before wiring. Do not feed the UPS from a wall receptacle.

⚠ WARNING

Batteries. Wear rubber gloves and rubber-soled boots, remove rings and watches, and use tools with insulated handles only. Do not lay tools on the batteries or the packs. Reversed battery polarity damages the UPS: always check it with a voltmeter.

⚠ WARNING

Heavy units. The UPS weighs 128–143 lb and each battery pack 123.6 lb. Lift them with two or more people, using the handles, and support them on rails or a shelf in the rack.

2 Check the delivery and the site

What is in the boxes, the room and the rack.

In the boxes: 1 × FERRUS SP RT UPS, with the rack ears and handles fitted · rail kit · accessory kit (check it against the packing list) · 1 × user manual · the BAT16192RT battery packs ordered, each in its own carton.

1. Inspect the UPS and the packs for transport damage. If anything is damaged or missing, do not switch it on: notify the carrier and your AEC dealer.
2. If the UPS was unpacked in a cold place, wait until it is completely dry inside and out. Condensation can cause electric shock.
3. Check the site against Table 2-1 and the rack space against Table 2-2.

TABLE 2-1 Site requirements

Item	Requirement
Location	Indoors, ventilated; away from water, flammable gases and corrosive agents; no direct sunlight, no conductive dust
Temperature	32–104 °F (0–40 °C); battery life is best at 59–77 °F (15–25 °C)
Humidity · altitude	Below 95 %, non-condensing · full power up to 3,300 ft (1,000 m)
Clearance	20 in (0.5 m) on each side; front and rear vents open — the transformer fans blow out at the rear
Working space	NEC 110.26 working space behind the rack: the terminals and the breaker are at the rear

TABLE 2-2 Dimensions and weights

Unit	Height	W × D × H, in	W × D × H, mm	Weight
6 kVA UPS	4U	17.3 × 22.8 × 6.7	439 × 579 × 170	128 lb (58.1 kg)
10 kVA UPS	5U	17.3 × 22.8 × 8.5	439 × 579 × 216	143 lb (64.9 kg)
BAT16192RT pack	3U	17.3 × 25 × 5.2	439 × 635 × 132	123.6 lb (56.1 kg)

3 Mount the UPS and the packs

In a 19-inch rack, the packs go below the UPS. As a tower, the UPS stands upright beside its packs.

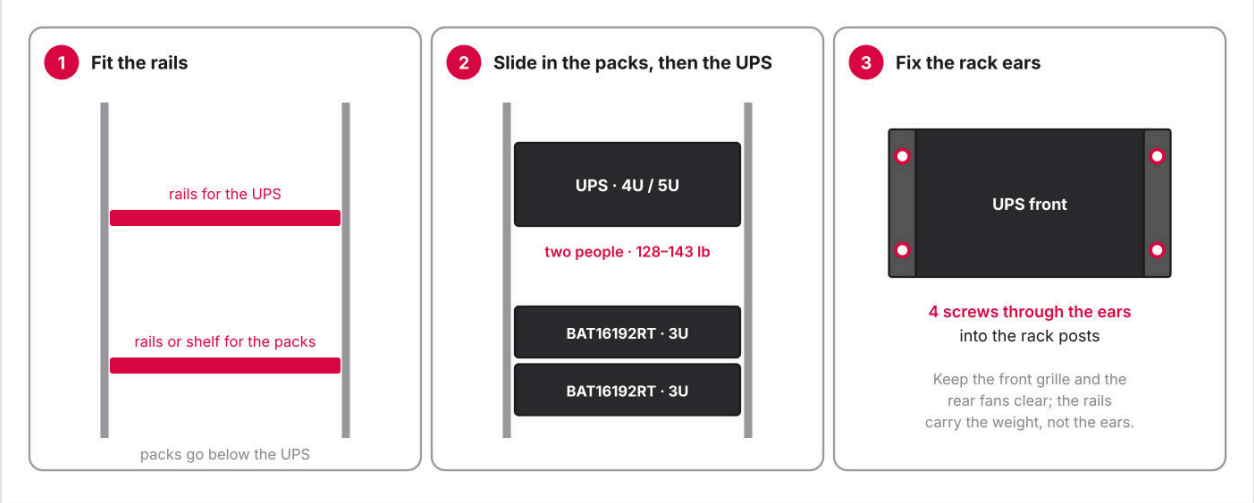


FIGURE 3-1 Mounting in a 19-inch rack

1. Fit the rail kit supplied with the UPS in the rack, at the height chosen for the UPS. Fit rails or a shelf rated for the weight of each pack below it (Figure 3-1, step 1).
2. Slide in the packs first, then the UPS, with two people (Figure 3-1, step 2).
3. Fix the rack ears to the rack posts with four screws (Figure 3-1, step 3). The rails carry the weight, not the ears.
4. Keep the front grilles and the rear free: the transformer fans blow out at the rear.
5. Tower orientation: stand the UPS upright on a flat floor beside its packs, and set the screen orientation in **Set › Display Set** at the first start.

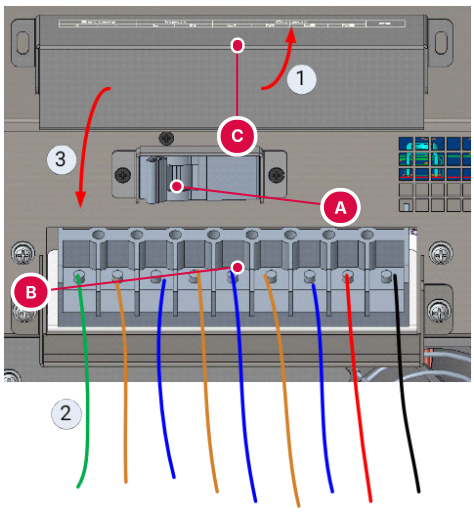
4 Wire the power

Ground first, then the input, the output with its jumpers, the battery packs last.



1. Input breaker
2. Cable-entry box: input, output and battery cables; terminal strip behind it
7. EPO terminals, normally closed loop
11. Transformer fans: air out

FIGURE 4-1 Rear of the FERRUS SP RT



A. Input breaker
B. Terminal strip: PE, L, N, L1, N1, L2, N2, BAT+, BAT−
C. Terminal cover, markings of each terminal

FIGURE 4-2 Terminal strip and input breaker with the cable-entry box removed

Size the branch circuit. The UPS is fed by a dedicated 2-pole branch circuit from the 120/240 V or 120/208 V service: two line conductors (240 V or 208 V between them) and the equipment grounding conductor. **No neutral is connected at the input.** Input breaker: the next standard rating (NEC 240.6) at or above both the maximum input current and 125 % of the rated input current at 240 V (NEC 215.2, 215.3) — Table 4-2, the same result on a 208 V supply; conductors rated for 75 °C terminations (NEC 110.14(C)).

TABLE 4-1 Currents and factory cable sizes

Rating	Input current, max.	Output current per 120 V leg	Battery current, max.	AC input cable	AC output cable	Battery cable
6 kVA	36 A	25 A	43 A	10 AWG (6 mm²)	10 AWG (6 mm²)	8 AWG (10 mm²)
10 kVA	63 A	42 A	65 A	8 AWG (10 mm²)	8 AWG (10 mm²)	6 AWG (16 mm²)

TABLE 4-2 Recommended overcurrent protection and copper conductors

Circuit	Sizing current	Recommended breaker (NEC 240.6)	Copper conductor, 75 °C (NEC 310.16)
Input, 6 kVA (2-pole)	36 A max.; 125 % × 26.9 A rated = 33.6 A	40 A	8 AWG
Input, 10 kVA (2-pole)	63 A max.; 125 % × 44.8 A rated = 56 A	70 A	4 AWG
Output leg, 6 kVA (configurations 01, 03, 04)	31.25 A	35 A	10 AWG
Output leg, 10 kVA (configurations 01, 03, 04)	52.5 A	60 A	6 AWG
Battery cable, 6 kVA	53.75 A	—	6 AWG
Battery cable, 10 kVA	81.25 A	—	4 AWG

The NEC example assumes copper THHN/THWN conductors at 75 °C, no more than three current-carrying conductors in the raceway and an ambient of 86 °F (30 °C). The installer's calculation prevails. Check that the conductor fits the terminal; ask AEC for the terminal size when you plan the cables.

⚠ CAUTION

In configuration 02 (one 120 V output) the whole rating flows through one 120 V output: 50 A (6 kVA) or 83 A (10 kVA). Size the load conductors and the output breaker for that current.

The terminal strip. One strip of nine terminals, behind the terminal cover below the input breaker: **PE · L · N · L1 · N1 · L2 · N2 · BAT+ · BAT−** (markings as printed on the unit). The input terminals are marked **L** and **N**, but they take the two line conductors of the 120/240 V or 120/208 V service: there is no input neutral.

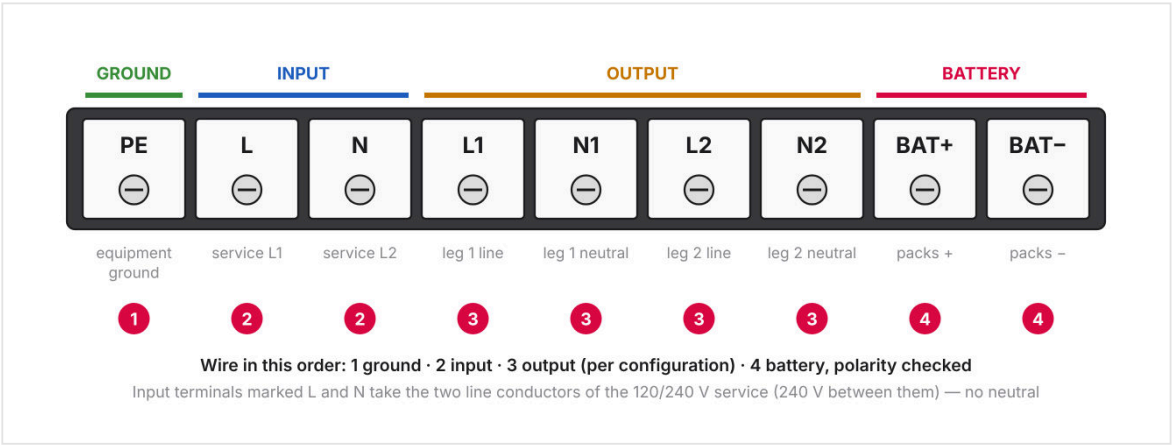


FIGURE 4-3 Terminal strip, seen from the rear with the cover removed, and the order of wiring

1. Check that the input breaker (1 in Figure 4-1) and every pack breaker are OFF (Figure 6-1, A).
2. Remove the terminal cover behind the cable-entry box (C in Figure 4-2).
3. **Ground first** (1 in Figure 4-3): connect the grounding conductor (green or green/yellow) to PE before any other wire.
4. **Input** (2): connect the two line conductors of the service to L and N — one to L, the other to N. No neutral.
5. **Output** (3): choose the output configuration in Table 4-3, fit its jumpers and connect L1, N1, L2 and N2 for it (Figure 4-4).
6. **Battery** (4): connect the battery-pack cables to BAT+ and BAT−, polarity checked, as in **Connect the battery packs**.
7. Check every connection, refit the terminal cover and close the cable-entry box. Install an output circuit breaker between the UPS output and the loads.

Choose the output configuration. The isolation transformer gives two 120 V legs; jumpers on the output terminals set the output. In a parallel system every unit uses the same configuration. In configurations 01 and 04 keep each 120 V leg within 25 A (6 kVA) or 42 A (10 kVA).

TABLE 4-3 Output configurations

No.	Output	Jumpers	Loads
01	Two separate 120 V	none	Load 1 on L1–N1, load 2 on L2–N2: half the rating each. Balance the two groups.
02	One 120 V	L1–L2 and N1–N2	One load on L1–N1: the full rating at 120 V.
03	One 240 V	N1–L2	One load across L1–N2: the full rating at 240 V; no neutral needed by the load.
04	120 V and 240 V together	N1–L2	120 V on L1–N1 and L2–N2, 240 V on L1–N2. Split-phase 3-wire loads: L1, N1 (= L2) and N2.

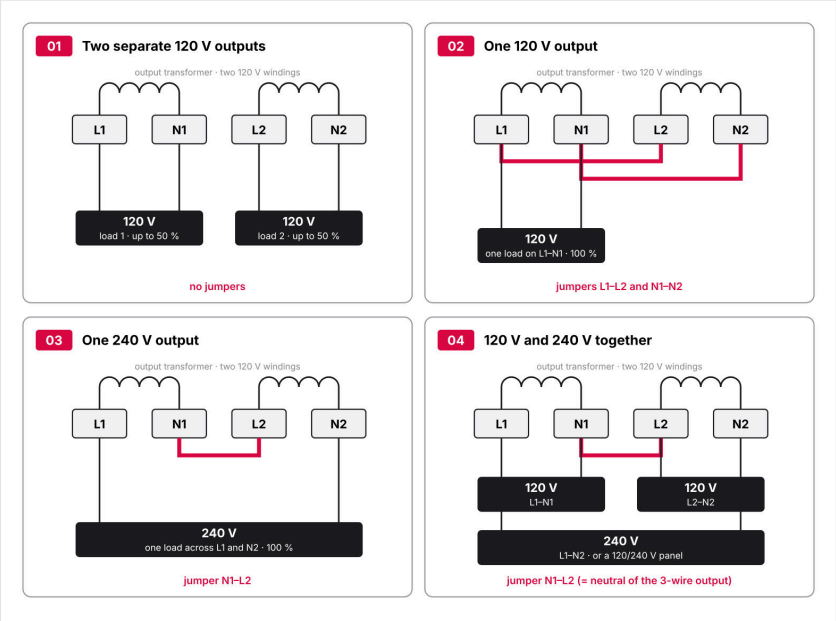


FIGURE 4-4 The four output configurations — red lines are the jumpers on the output terminals

5 Connect the battery packs

One to four BAT16192RT packs (16 × 12 V 9 Ah, 192 V DC each), wired in parallel to BAT+ and BAT−.

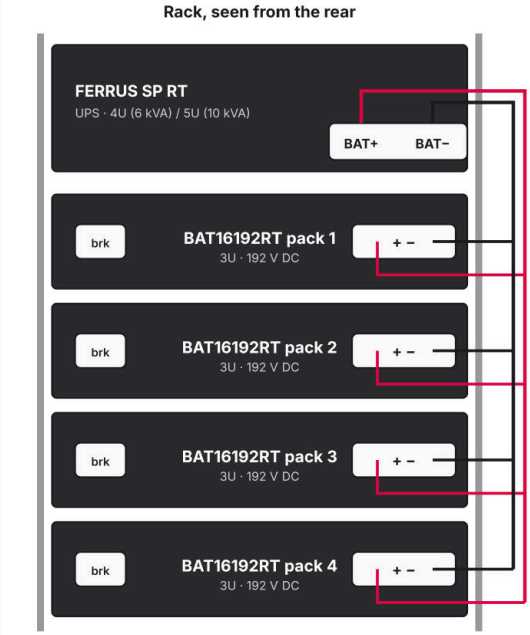


FIGURE 5-1 Connecting one to four BAT16192RT packs, rack seen from the rear: red + to BAT+, black – to BAT–, packs in parallel

⚠ CAUTION

Check the polarity of each pack with a voltmeter before you connect it. Reversed polarity damages the UPS.

1. Open the UPS input breaker and the pack breakers (Figure 6-1, A).
2. Mount the packs below the UPS in the rack, or beside the tower.
3. Check the polarity of each pack with a voltmeter.
4. Wire each pack's cables to BAT+ and BAT– behind the cable-entry box: red to BAT+, black to BAT– (Figure 5-1, Figure 4-3). Cable 8 AWG (10 mm²) for the 6 kVA, 6 AWG (16 mm²) for the 10 kVA (factory sizes, Table 4-2 for the NEC example).
5. Leave the pack breakers open until start-up.

6 Start the UPS

Pack breakers first, then the input breaker; line (normal) mode in about one minute.

Before you start: the wiring is complete and the terminal cover refitted, the loads are switched off, the output breaker is installed, and the communication, EPO and parallel cables (if used) are connected.

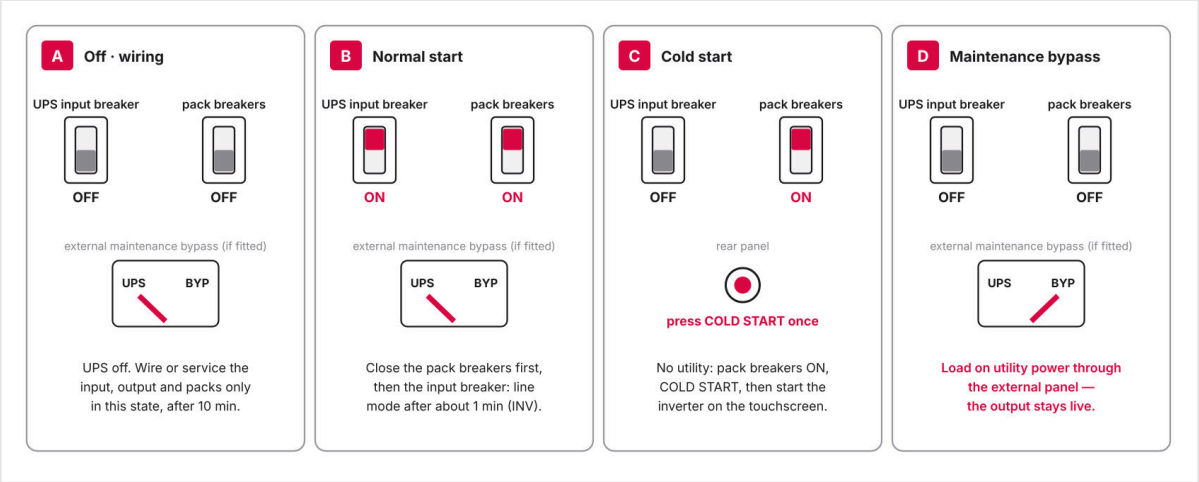
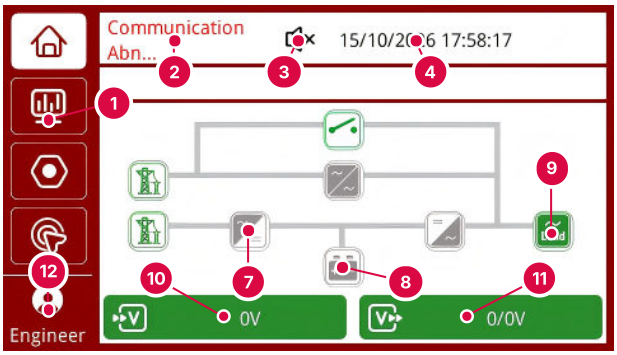


FIGURE 6-1 Breaker states A to D — red ON, gray OFF

1. Close the pack breakers, then the input breaker (Figure 6-1, B). The fans start and the touchscreen lights.
2. Wait. The rectifier starts; after about one minute the UPS goes to line (normal) mode: only **INV** lit.
3. Check the home page (Figure 6-2): power flow from the utility through rectifier and inverter to the load, no alarm.



1. Side menu: Home, Data, Set, Control
2. Status message, for example an alarm
3. Speaker icon: mute or unmute the buzzer
4. Date and time
7. Rectifier, then inverter on the right
8. Battery
9. Load
10. Input voltage
11. Output voltage of the two legs, L1/L2
12. User level logged in (User or Engineer)

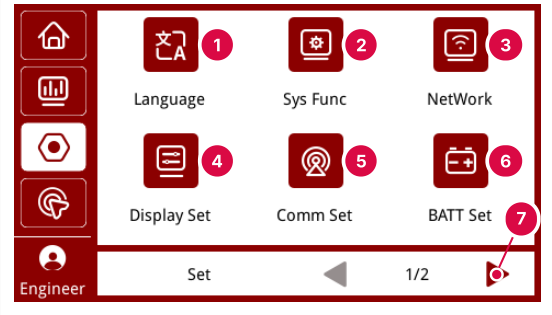
FIGURE 6-2 Home page

7 Set and check

The few settings needed at the first start, the checks for normal mode, then the loads.

⚠ CAUTION

Only qualified personnel, logged in as **Engineer**, may change the settings. The battery set-up must match the packs installed, or the batteries and the UPS can be damaged.



1. Language
2. Sys Func
3. NetWork
4. Display Set
5. Comm Set
6. BATT Set
7. Page 2: system settings

FIGURE 7-1 Set, page 1

1. **Battery: Set › BATT Set** (6 in Figure 7-1) — battery type, 16 blocks per string, the capacity (Ah) and the number of packs, and the charge current (1–8 A). Ask AEC for the charge-current setting for your number of packs.
2. **Date and time: Set › Sys Func** (2).
3. **Screen: Set › Display Set** (4) — horizontal for the rack; change it for the tower orientation.
4. **Output:** the output is 120/240 V, 60 Hz. The rated values and the system mode (single, parallel or ECO) are on page 2 (7) — engineer level, at commissioning.
5. **Check normal mode:** only **INV** lit; **Data › Current Alarm** empty; **Data › Output** shows the voltage of both legs.
6. **Switch on the loads** one at a time, the largest first. Then check **Data › Load**: each 120 V leg within 25 A (6 kVA) or 42 A (10 kVA).
7. **Charge for at least 12 hours** before you rely on the full runtime (at full load: 6 kVA 6 min with one pack, 34 min with four; 10 kVA 3.2 min with one pack, 17.9 min with four).

i NOTE Enter the number of packs and the charge current in **Set › BATT Set** whenever you add or remove a pack. Write the input breaker, conductor size, output configuration and number of packs in the installation record of the user manual.

8 Shut down and maintenance bypass

Breaker states as in the breaker states figure of the start-up step.

Shut down (normal mode)

1. Switch off the loads.
2. Switch the inverter off: **Control › Function**, page 2, ON/OFF control. The UPS transfers to bypass.
3. Open the input breaker, then the pack breakers, to switch the UPS off completely (Figure 6-1, A).

Maintenance bypass (option). The FERRUS SP RT has no maintenance bypass switch on its rear panel. Where an external maintenance bypass panel is fitted (option — ask AEC for the panel and its wiring for your site):

1. Transfer the UPS to bypass: **Control › Function › Manual Bypass**.
2. Switch the external maintenance bypass to BYPASS (Figure 6-1, D).
3. Open the UPS input breaker, then the pack breakers. Alarm 39 shows while the maintenance breaker is closed.

To return, reverse the order: close the pack breakers and the input breaker, wait for the UPS to run on bypass, switch the external panel to UPS, then **Ecs Manual Bypass**.

⚠ WARNING

On maintenance bypass the output terminals and the load stay live, fed by the utility, and the load is not protected.

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Settings, alarms, maintenance and every detail: **FERRUS SP RT 6–10 kVA User Manual, AEC-UM-FSRT-US** (aecups.com · AEC app › Support › Downloads).