

SRNE phase balancing: big consumers on one phase trip the inverter on battery

Problem

When the site runs on battery (grid outage, typically evening or night), switching on a large single-phase load such as a heater or fan trips the inverter off until the load is removed. This causes an outage for the whole site.

Evidence (2026-08-11)

Per-phase active power read directly off the SRNE ASP48120SH3 (bus-quiet mbpoll on gw-aaron):

Phase	On mains (state 2)	On battery (state 3)
L1	102 W	145 W
L2	230 W	327 W
L3	212 W	291 W
Total	544 W	763 W

L1 consistently carries about half of L2 and L3. Total load is small (under 1 kW against the inverter rating of 12 kW / 24 kVA, roughly 4 kW / 8 kVA per phase), so the trip is not a total-capacity overload. It points to the big consumers being concentrated on one phase: a large load landing on an already heavier phase, plus its switch-on inrush, can overload that single phase or trip protection while the other phases sit nearly idle.

Action

1. Rebalance customer phase assignments toward an even split. Prefer balancing by measured load rather than by simple 4-3-3 count.
2. Identify the big consumers and move them off the loaded phases (L2 and L3) onto the lighter phase (L1).

3. Re-measure per-phase load after rebalancing to confirm the spread has narrowed.

Use the backup-phase-dashboard phase-balance analysis (reads the customer meter CSVs) to plan the reassignment.

Also check (a separate, compounding cause)

Protection and power-save settings may make the trip worse on battery. Read (read-only) the power-save level E207, eco mode E20C, overload auto-restart E20D, and overload bypass E212. Off-grid there is no mains to bypass to, so an overload just shuts the inverter down.

Tracking

GitHub issue: [Nearly-Free-Energy/nfe-modbus-energy-logger #70](#)

Revision #2

Created 2026-08-11 10:02:02 UTC by hillary.arinda

Updated 2026-08-11 10:02:15 UTC by hillary.arinda