CONNECTION AND SETUP GUIDE

Kit POWLAND ISolar-SMS-5KW-24V-WiFi + Nexcell 25.6V 150Ah 3840Wh

Inverter POWLAND ISolar-SMS-5KW-24V-WiFi + battery Nexcell 25.6V 150Ah 3840Wh



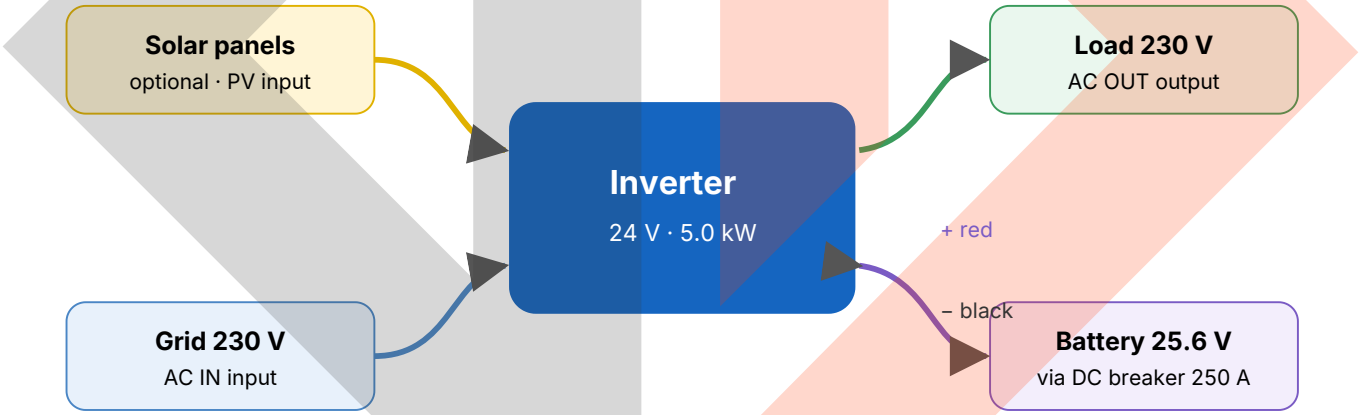
Kit contents

- **Inverter POWLAND ISolar-SMS-5KW-24V-WiFi**
- **Battery Nexcell 25.6V 150Ah 3840Wh**

What else you will need

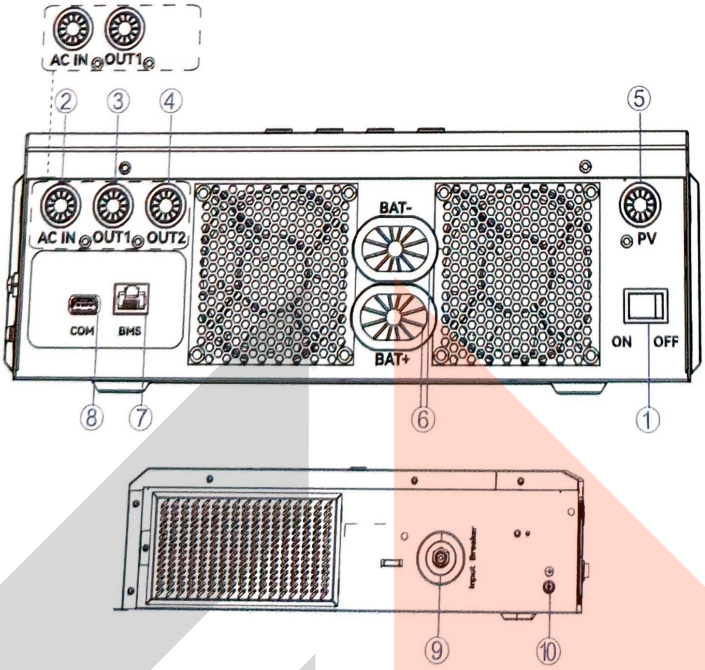
- Battery–inverter power cables 50 mm², M8 lugs
- DC breaker / fuse 250 A
- 32 A breaker on the grid input
- Screwdriver, 13 mm wrench, multimeter

Wiring diagram



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Inverter connectors: bottom panel and side wall



№	Connector	What it is	What connects where
1	**ON / OFF**	Inverter power switch	Switch on after connecting the battery and its DC breaker
2	**AC IN**	Grid / generator cable entry to the AC IN terminals (L, N, PE)	Via a 32 A breaker; do not confuse with the outputs
3	**OUT1**	Entry for the output 1 cable (terminals L, N, PE)	Via a 32 A breaker to the load panel
4	**OUT2**	Entry for the output 2 cable, not on all models	Second load; the cable and breaker are not specified separately in the manual
5	**PV**	Solar panel cable entry to the PV+ / PV– terminals	Via a PV DC breaker; Voc up to 500 V, MPPT 60–450 V, start from 80 V, current up to 27 A
6	**BAT– / BAT+**	Entries for the 24 V battery power cables (top: BAT–, bottom: BAT+)	50 mm² cable with lugs via a 250 A DC breaker: red to BAT+, black to BAT–
7	**BMS**	RJ45 port for communication with the lithium battery BMS (RS485 / CAN)	Battery communication cable; program 17 = FEL, program 44 = battery protocol; the pinout is not given in the manual
8	**COM**	Communication port (USB connector) for the Wi-Fi module	Wi-Fi module for monitoring
9	**Input Breaker**	AC grid input breaker (on the side wall)	Built-in grid input breaker; the rating is not given in the manual
10	**PE**	Protective earth terminal (on the side wall)	Earth cable with an OT ring lug (included)

Top left, in a frame: the single-output version (AC IN and OUT1 only).

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Key values for this kit

28.4 V charge voltage (20)	**27.2 V** float voltage (21)	**24.0 V** cut-off (19)
FEL battery type (17)	**60 A** max. charge current (07)	**40 A** grid charging (06)

Connection procedure

1. Mount the inverter vertically on a non-combustible wall in a dry place. Leave at least 20 cm of free space above and below for cooling.
2. Make sure everything is switched off: inverter button OFF, battery switch/button OFF, DC breaker off, 230 V grid not connected.
3. Install a **250 A** DC breaker or fuse between the battery and the inverter in the positive (red) wire.
4. Connect the power cables (cross-section at least **50 mm²**, M8 lugs): **red** from the battery “+” to the inverter “+ BAT”, **black** from the battery “−” to “− BAT”. Check the polarity twice: swapping “+” and “−” is guaranteed to damage the inverter.
5. Tighten the terminal bolts firmly (without stripping the thread) and fit the protective caps. A loose contact heats up and melts the terminals.
6. Switch on the battery (button or switch on the case, if any), then the DC breaker.
7. Switch on the inverter with the ON button. The battery voltage should appear on the display. Enter the settings from the table below.
8. Switch off the inverter and connect the 230 V grid to the **AC IN** terminals (L, N, PE) through a separate 32 A breaker.
9. Connect the load (your socket/distribution board) to the **AC OUT** terminals (L, N, PE). Never mix up AC IN and AC OUT: feeding grid power into the output damages the inverter.
10. If you have solar panels, connect them to the **PV** input last, observing polarity. The open-circuit voltage of the panels (Voc) rises in frosty weather: do not exceed the PV maximum on the inverter label.
11. Switch on the inverter and check: 230 V at the output, the battery charges from the grid (charging icon on the display), the lights stay on when the grid is off.

Inverter settings

Menu access: hold the **ENTER** button for 2 seconds. Use ▲/▼ to select the program number, ENTER, change the value, ENTER to save. Exit: **ESC.**

№	Parameter	Value	Why
01	Output voltage	**230V**	Standard for Ukraine and Europe.
02	Output frequency	**50Hz**	Standard for Ukraine and Europe.

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03	Output source priority	**GPb** (no panels) or **PbG** (with panels)	GPb: from the grid, battery kept full in case of a power cut. PbG: solar and battery first, the grid when they are not enough.
04	Input mode	**UPS (**grid) / **GEn** (generator)	UPS: fast switchover for computers. GEn: running on a generator.
05	Charging source priority	**PnG** (solar + grid)	Charging from both solar and grid.
06	Grid charging current	**40 A**	Moderate grid charging, without overloading the wiring or the battery.
07	Maximum charging current (total)	**60 A**	Total solar + grid charging, safe for LiFePO4 150Ah. Do not set higher.
09	Auto restart after overload	**ON**	The inverter resumes operation by itself.
10	Auto restart after overheating	**ON**	The inverter resumes operation by itself.
17	Battery type	**FEL** (LiFePO4)	Lithium iron phosphate. AGM / FLD are for lead-acid only.
44	BMS communication	**OFF**	No communication cable to the inverter.
20	Charge voltage (CV)	**28.4 V**	Standard for LiFePO4 8S (25.6 V).
21	Float voltage	**27.2 V**	The battery is not overcharged when it stays on the grid for a long time.
19	Cut-off voltage	**24.0 V**	The inverter cuts the output before the battery reaches BMS protection.
15	Switch to grid	**25.0 V**	When discharged to this voltage, the load switches to the grid.
16	Return to battery	**27.0 V**	After recharging to this voltage, the inverter runs from the battery again.
32	Equalization charge	**OFF**	Not used for LiFePO4.

Program numbers as in the POWLAND SMS-5kW menu according to the manufacturer's manual. After entering the settings, switch the inverter off and on again.

Which mode to choose

- **Backup during power cuts only (no panels):** 03 = GPb, 05 = PnG. The inverter runs from the grid and the battery is always full; when the power goes out it switches to the battery automatically.
- **You have solar panels and want to save:** 03 = PbG, 05 = PnG (or OPu — solar only). Solar power by day, battery at night, the grid only when the battery has dropped to 25.0 V.
- **Running on a generator:** 04 = GEn, 06 = 40 A or less, so as not to overload the generator.

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How long it runs on battery

Load	Example	Runtime
100 W	router, lights, chargers	**≈ 31.1 h**
200 W	fridge + lights	**≈ 15.6 h**
300 W	fridge + lights + TV	**≈ 10.4 h**
500 W	fridge, laptop, pump	**≈ 6.2 h**
1000 W	boiler, kettle briefly, several appliances	**≈ 3.1 h**
2000 W	air conditioner, water heater, electric stove	**≈ 1.6 h**
4000 W	whole house, pump, power tools	**≈ 0.8 h**

Approximate: 90% of battery capacity and inverter efficiency ≈90%. A fridge runs in cycles, so the real runtime is longer.

Check after start-up

- Battery voltage on the display: ≈ 27.2–28.4 V when full, ≈ 25.0 V when discharged.
- Switch off the grid breaker: the load must keep running without interruption.
- After 10–15 min of operation, touch the terminals and cables: they must not be hot. If they heat up, a connection is loose or the cable is too thin.
- A battery below 23.2 V may have gone into BMS protection: charge it from the grid through the inverter.

Safety. Make all connections only with the battery, inverter and grid switched off. Do not short-circuit the battery terminals: the short-circuit current of LiFePO4 is very high. Do not install the inverter in a bathroom, outdoors in the rain or near flammable materials. If in doubt, contact an electrician.

Shutdown and maintenance

- Switch off in reverse order: load → grid → panels → inverter → DC breaker → battery.

- Every 3 months, check that the terminals are tight and the ventilation openings are clean.
- If you do not use the kit for a long time, charge the battery to 50–70% and switch it off.

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