CONNECTION AND SETUP GUIDE

Kit POWGROW SMS-5kW 24V + Cyccle Volt 25.6V 100Ah 2560Wh



Inverter POWGROW SMS-5kW 24V + battery Cyccle Volt 25.6V 100Ah 2560Wh

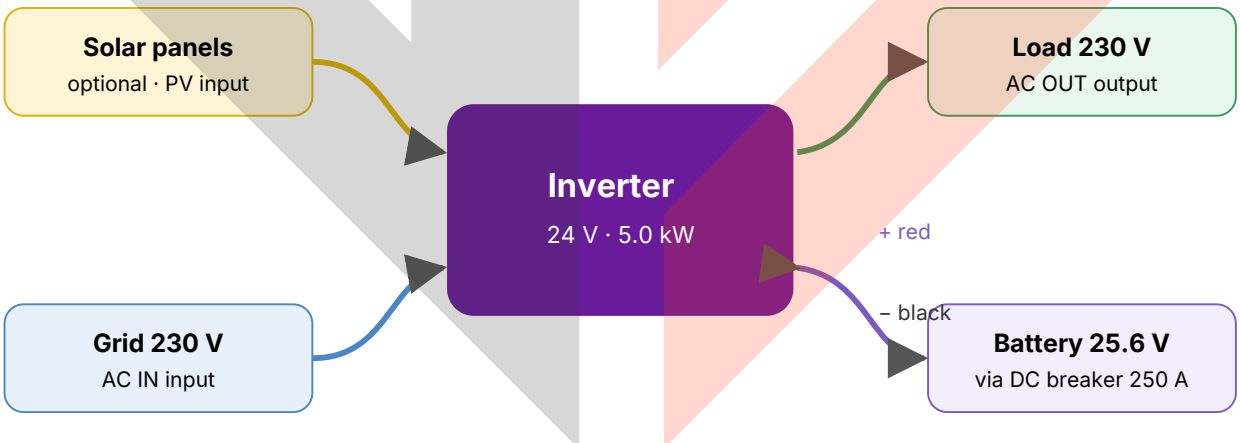
Kit contents

- **Inverter POWGROW SMS-5kW 24V**
- **Battery Cyccle Volt 25.6V 100Ah 2560Wh**

What else you will need

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

Wiring diagram



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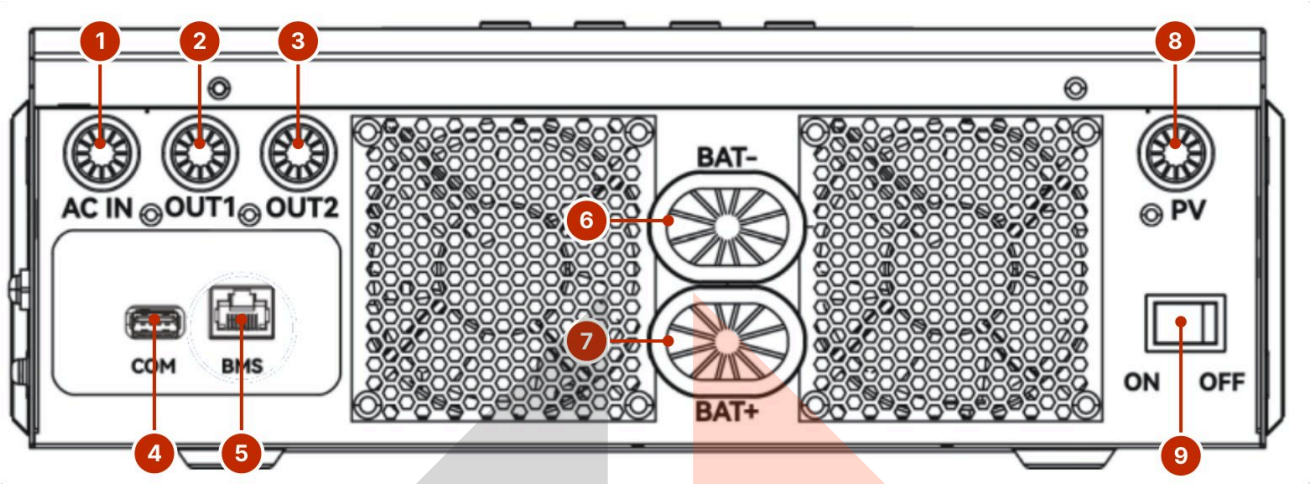
Inverter connectors: bottom panel



№	Connector	What it is	What connects where
1	**AC IN**	Grid or generator input (L, N, PE).	Cable from the grid through a separate 40 A breaker. A generator also connects here, item 04 = GEN.
2	**OUT1**	Main AC output 230 V.	Cable to the load panel (L, N).
3	**OUT2**	Second AC output. It can be switched off automatically by battery voltage, discharge time or SOC (items 38– 40).	Cable to less important loads (L, N).
4	**COM**	Communication port (USB connector).	The Wi-Fi module (dongle) plugs in here directly.
5	**BMS**	RJ45 port for communication with the lithium battery BMS, RS485 or CAN.	Communication cable from the battery BMS. Protocol: item 44. Inverter port pinout: 1 = RS485B, 2 = RS485A, 4 = CANH, 5 = CANL; straight-through cable.
6	**BAT–**	Battery “minus” cable entry.	Battery negative, 50 mm² cable.
7	**BAT+**	Battery “plus” cable entry.	Battery plus via a 250 A fuse / isolator.
8	**PV**	Solar panel cable entry to the PV+ and PV– terminals.	Panels via a separate DC breaker.
9	**ON / OFF**	Inverter power switch.	Switch on after all connections are complete.

The grid PE protective wire is connected first, on the inverter side (side wall figure in section 3.3 of the manufacturer’s manual).

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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)	**50 A** max. charge current (07)	**30 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 40 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.

Important: power from the battery. The battery BMS is usually rated for 100 A continuous current (the exact value is on the battery label). That is ≈ **2.3 kW** of continuous load from the battery. The inverter delivers its full 5.0 kW when grid or solar power is available. If the battery “trips” during a power cut, reduce the number of powerful appliances switched on at the same time.

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.**

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№	Parameter	Value	Why
01	Output voltage	**230V**	Standard for Ukraine and Europe.
02	Output frequency	**50Hz**	Standard for Ukraine and Europe.
03	Output source priority	**“Grid first”** (no panels) or **PBG** (with panels)	“Grid first”: from the grid, battery kept full for power cuts. PBG: solar and battery first, the grid when they are not enough.
04	Input mode	**UPS** (grid) / **GEN** (generator)	UPS: fast switching for computers. GEN: power from a generator.
05	Charging source priority	**PNG** (solar + grid)	Charging from both solar and grid.
06	Grid charging current	**30 A**	Moderate grid charging, without overloading the wiring or the battery.
07	Maximum charging current (total)	**50 A**	Total solar + grid charging, safe for LiFePO4 100Ah. Do not set higher.
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 POWGROW 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 = “Grid first”, 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 OPV for solar only). Solar by day, battery at night, grid only when the battery has dropped to 25.0 V.

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- **Running on a generator:** 04 = GEN, 06 = 30 A or less, so as not to overload the generator.

How long it runs on battery

Load	Example	Runtime
100 W	router, lights, chargers	**≈ 20.7 h**
200 W	fridge + lights	**≈ 10.4 h**
300 W	fridge + lights + TV	**≈ 6.9 h**
500 W	fridge, laptop, pump	**≈ 4.1 h**
1000 W	boiler, kettle briefly, several appliances	**≈ 2.1 h**
2000 W	air conditioner, water heater, electric stove	**≈ 1.0 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.

Bluetooth: app and connection

The battery has built-in Bluetooth. On the phone you can see the charge level, voltage, current, temperature and BMS protection status. The app is called **XiaoXiangElectric (** icon: a white elephant on a light blue background). Both QR codes are on the white sticker on the side of the battery. Bluetooth works

only with a phone: the battery does not exchange data with the inverter, so the battery type in the inverter remains **USE.**

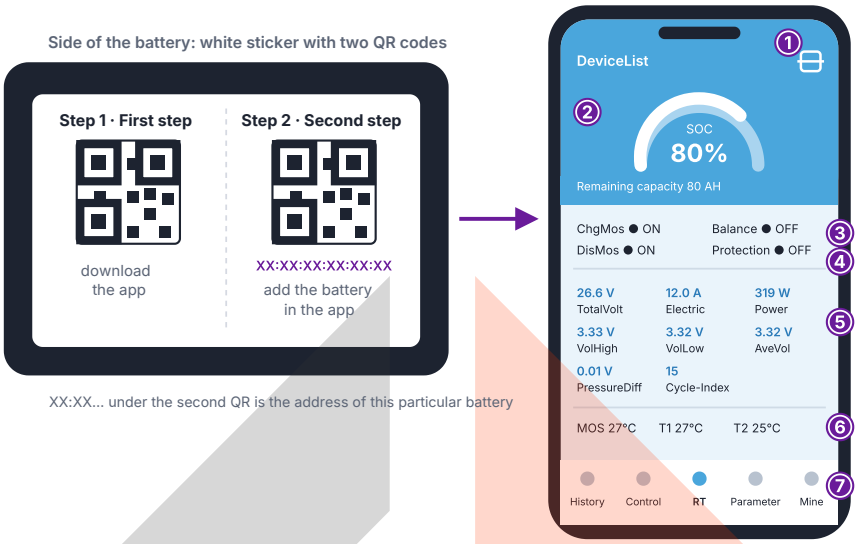

Figure for reference: the numbers on the screen are an example.

1. Scan the **first QR code (“** First step”) on the sticker with your phone camera. The XiaoXiangElectric app page will open (on iPhone, in the App Store). Install it. Install exactly this app, not ones with similar names.
2. Turn on Bluetooth on the phone. On first launch, allow the app access to Bluetooth (on Android also to “Nearby devices” or location: without this the phone cannot see the battery).
3. Go up to the battery with the phone, within a few metres.
4. On the app’s main screen, tap the scan icon in the top right corner ① and point the camera at the **second QR code** (“Second step”). The app will add this battery and connect to it.
5. After connecting, the line “Current Connected” with the battery name appears at the top, and its data below (tab **RT).**
6. If there are several batteries, add each one with its own second QR code. The battery address is printed under it (six pairs of characters separated by colons): it makes the batteries easy to tell apart in the list.

What the app shows

② “SOC” — charge level in percent; “Remaining capacity” — how many amp-hours are left. ③ “ChgMos” and “DisMos” — charge and discharge allowed (ON). OFF means the BMS has switched off charging or discharging. ④ “Balance” ON — the BMS is balancing the cells right now. “Protection” ON — a BMS protection has tripped (overcharge, deep discharge, high current or temperature).

⑤ “TotalVolt” — battery voltage; “Electric” — current; “Power” — power; “VolHigh”, “VolLow”, “AveVol” — highest, lowest and average cell voltage; “PressureDiff” — voltage difference between cells; “Cycle-Index” — number of cycles. ⑥ “MOS”, “T1”, “T2” — temperature of the BMS power switches and of the sensors inside the battery.

⑦ Tabs: **History —** history, **Control —** control, **RT —** real-time data, **Parameter —** BMS parameters, **Mine —** app settings.

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In the **Control** tab, the “Charge Switch” turns battery charging on and off: keep it **ON,** otherwise the inverter will not charge the battery. “ClearWarning” resets warnings. Do not change “AutoBalance”, “Current calibration”, “Reset capacity” or the **Parameter** tab unless necessary: they hold the factory BMS settings.

If Bluetooth does not connect

- Check that Bluetooth is on on the phone and the app has permissions (phone settings → apps → XiaoXiangElectric).
- Move closer to the battery. A metal cabinet and walls weaken the signal.
- The battery may already be connected to another phone: close the app on it and try again.

- If the battery is deeply discharged and has gone into protection, Bluetooth may not respond. Charge it from the grid via the inverter and try again.

The app only shows the battery status. It does not replace the inverter settings in this guide.

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