CONNECTING THE BATTERY TO THE INVERTER

Aninerel ANL-4200T-24L-W-PRO 4.2kW 24V + DATOU BOSS 25.6V 314Ah 8.03kWh

Connecting the DATOU BOSS 25.6V 314Ah 8.03kWh battery to the Aninerel ANL-4200T-24L-W-PRO 4.2kW 24V inverter



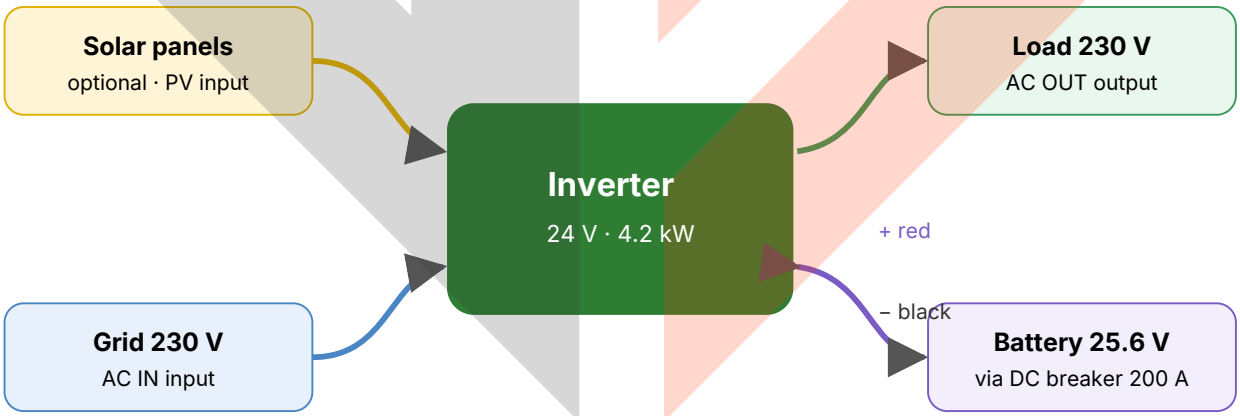
What is included in the system

- **Inverter Aninerel ANL-4200T-24L-W-PRO 4.2kW 24V**
- **Battery DATOU BOSS 25.6V 314Ah 8.03kWh**

What else you will need

- Battery–inverter power cables 35 mm², M8 lugs
- RS485 communication cable (RJ45), e.g. “Communication cable 1.3 m”
- DC breaker / fuse 200 A
- 50 A breaker, 6 mm² cable to the grid input
- Screwdriver, 13 mm wrench, multimeter

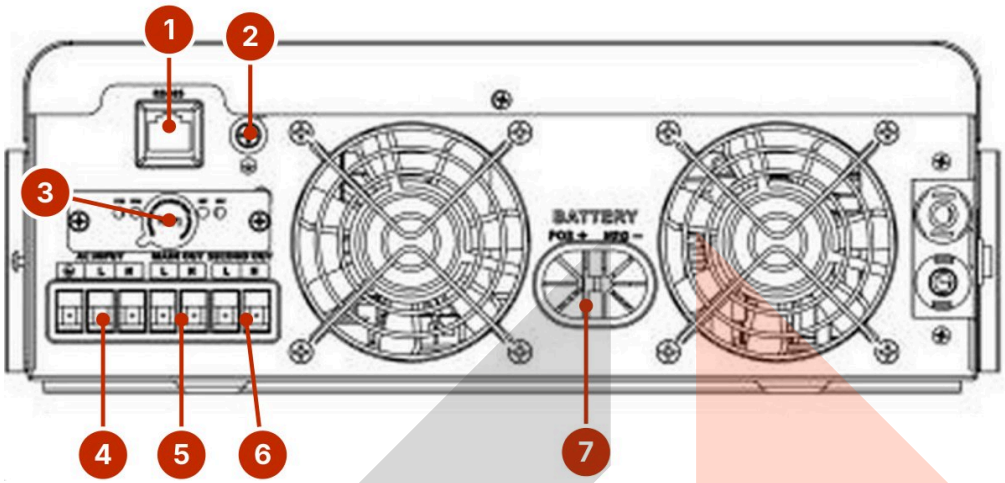
Wiring diagram



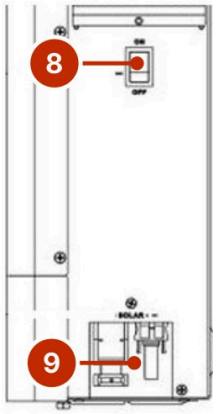
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Inverter connectors: bottom panel and side wall

вигляд знизу



бокова стінка



№	Connector	What it is	What connects where
1	**RS485 (BMS)**	RJ45 port for RS485 communication with the lithium battery BMS.	Battery communication cable, “pin to pin”: pin 1 — RS485-B, 2 — RS485-A, 7 — RS485-A, 8 — RS485-B. Then select LI2 or LI4 in program 05.
2	**Grounding**	Case earthing screw.	Protective PE wire (yellow-green). The inverter must be connected to a permanent earth.
3	**Wi-Fi antenna port**	Built-in Wi-Fi Plug Pro module for monitoring via the app.	Screw on the Wi-Fi antenna from the kit (see the Wi-Fi page).
4	**AC INPUT (⏚ · L · N)**	Grid or generator input.	Via a separate 50 A breaker. 6 mm² cable. PE first, then L (brown/black) and N (blue).
5	**MAIN OUT (L · N)**	Main output (OP1).	Panel for essential loads. 6 mm² cable. Disconnection from the battery: program 31.
6	**SECOND OUT (L · N)**	Second output (OP2).	Less important loads. Switches off before the main output (program 29); enabled by program 43; overload warning threshold: program 47.
7	**BATTERY (POS + · NEG –)**	Battery terminals 24 V (cable entry in the middle).	50 mm² cable with lugs, 4– 6 N·m; separate DC protection. There is no reverse polarity protection, so check with a tester.
8	**ON / OFF**	Power switch (on the side wall in the manual’s figure).	Switch on after all cables are connected and the battery is attached.
9	**PV (SOLAR + · –)**	Solar panel input (on the side wall), sockets for PV connectors; 2 connectors included.	Via a separate DC breaker. 6 mm² cable. Open-circuit voltage no more than 500 V.

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Figure from the manufacturer's manual (p. 2, "Product overview"); the two round elements on the right of the bottom panel are not described in the manual.

Key values for this pair

28.4 V charge voltage (26)	**27.2 V** float voltage (27)	**24.0 V** cut-off (31)
LI2 BMS protocol (05)	**100 A** max. charge current (02)	**40–100 A** grid charging (11)

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 **200 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 **35 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. Connect the battery and the inverter with the **communication cable** (RJ45): **RS485** port on the battery → **BMS / RS485** port on the inverter. Do not plug the cable into the CAN or WiFi port. For protocol settings, see "Battery communication".
7. Switch on the battery (button or switch on the case, if any), then the DC breaker.
8. Switch on the inverter with the ON button. The battery voltage should appear on the display. Enter the settings from the table below.
9. Switch off the inverter and connect the 230 V grid to the **AC IN** terminals (L, N, PE) through a separate 50 A breaker.
10. 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.
11. 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.
12. 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.

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Battery communication: Pylontech protocol (RS485)

This battery has an RS485 port and “talks” to the inverter: the inverter sees the state of charge in percent (SOC) and takes the correct charge voltages and currents from the BMS by itself.

On the battery:

1. The Pylontech protocol is already set on the battery at the factory; nothing needs to be changed on the battery.
2. Battery address (ADD DIP switches, if present) for a single battery: all set to OFF (address 0/1 according to the battery manual).

On the inverter:

1. Program **05** (battery type) = **LI2.**
2. Cable from the inverter **BMS / RS485** port to the battery **RS485** port.
3. Switch the inverter off and on. After 10–30 seconds the battery charge should appear on the display in **%.** If only the voltage or a communication error (BMS communication warning) appears instead of percent, check the cable, port and protocol.
4. Once communication is established, the inverter takes the charge (26, 27) and cut-off (31) voltages from the battery. The values in the table below are a fallback if communication is lost.
5. The thresholds for switching to the grid and back (12, 13) are set in percent with BMS communication: recommended **20%** switch to grid, **80%** return to battery.

Inverter settings

Entering the menu: hold the **ENTER** (or **SET**) button for 3 seconds. Use ▲/▼ to select the program number, press ENTER, change the value, press ENTER to save. Exit: **ESC**.

№	Parameter	Value	Why
01	Output source priority	**UTI** (no panels) or **SBU** (with panels)	UTI: we run from the grid and keep the battery full in case of a power cut. SBU: solar first, then battery, then grid.
02	Maximum charging current (total)	**100 A**	Safe for LiFePO4 314Ah. If the inverter does not allow this much, set its maximum.
03	AC input voltage range	**UPS** (from the grid) / **APL** (from a generator)	UPS: fast switchover, computers do not restart. APL: if you run on a generator.
05	Battery type / BMS protocol	**LI2**	LI2 = PYLON US2000 protocol. LI4 in this inverter is its own protocol, not Growatt.
06	Auto restart after overload	**LTE** (enabled)	The inverter resumes operation by itself.
07	Auto restart after overheating	**TTE** (enabled)	The inverter resumes operation by itself.
09	Output frequency	**50 Hz**	Standard for Ukraine and Europe.

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11	Maximum grid charging current	**40–100 A**	Moderate grid charging so as not to overload the wiring and the battery.
12	Back-to-grid voltage (SBU mode)	**25.0 V**	When the battery discharges to this voltage, the load switches to the grid (if available).
13	Back-to-battery voltage (SBU mode)	**27.0 V**	After recharging to this voltage, the inverter runs from the battery again.
16	Charging source priority	**SNU** (solar + grid)	The battery charges from both solar and grid. Without panels, it charges from the grid.
26	Charge voltage (Bulk / CV)	**28.4 V**	Standard for LiFePO4 8S (25.6 V).
27	Float voltage	**27.2 V**	The battery is not overcharged when it stays on the grid for a long time.
31	Main output cut-off (OP1)	**24.0 V**	The inverter switches off its output so as not to drain the battery to zero and trip the BMS.

Program numbers follow this inverter 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):** 01 = UTI, 16 = SNU. 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:** 01 = SBU, 16 = SNU (or CSO). Solar power by day, battery at night, the grid only when the battery has dropped to 25.0 V.
- **Running on a generator:** 03 = APL, 11 = 40–100 A or less, so as not to overload the generator.

How long it runs on battery

Load	Example	Runtime
100 W	router, lights, chargers	**≈ 65.1 h**
200 W	fridge + lights	**≈ 32.6 h**
300 W	fridge + lights + TV	**≈ 21.7 h**
500 W	fridge, laptop, pump	**≈ 13.0 h**
1000 W	boiler, kettle briefly, several appliances	**≈ 6.5 h**
2000 W	air conditioner, water heater, electric stove	**≈ 3.3 h**
4000 W	whole house, pump, power tools	**≈ 1.6 h**

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

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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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