CONNECTING THE BATTERY TO THE INVERTER

GSIKE 11kW 48V WiFi + 51.2V 100Ah 5.12kWh rack with display

Connecting the 51.2V 100Ah 5.12kWh rack battery with display to the GSIKE 11kW 48V WiFi inverter



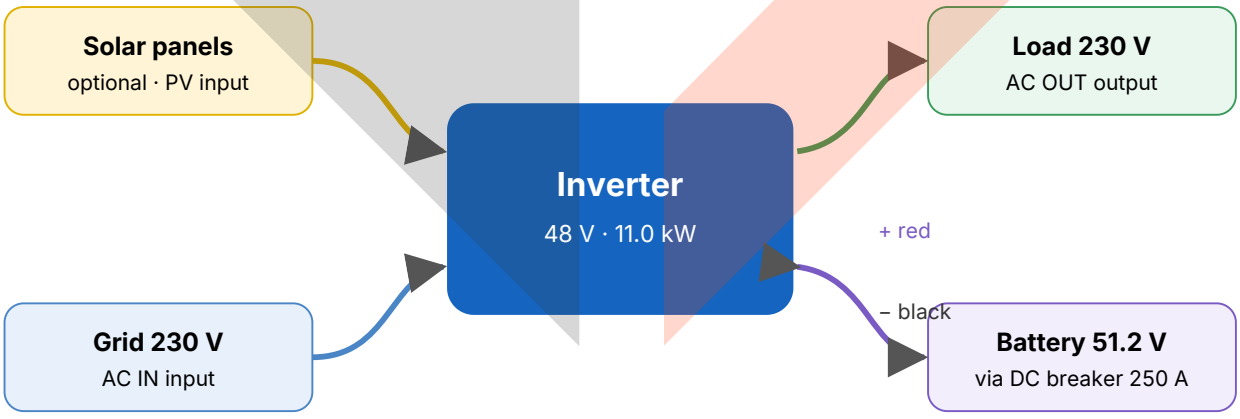
What is included in the system

- **Inverter GSIKE 11kW 48V WiFi**
- **Battery 51.2V 100Ah 5.12kWh rack with display**

What else you will need

- Battery–inverter power cables 50 mm² (or 2×35 mm²), M8 lugs
- RS485 communication cable (RJ45), e.g. “Communication cable 1.3 m”
- DC breaker / fuse 250 A
- 63 A breaker, 16 mm² cable to the grid input
- Screwdriver, 13 mm wrench, multimeter

Wiring diagram



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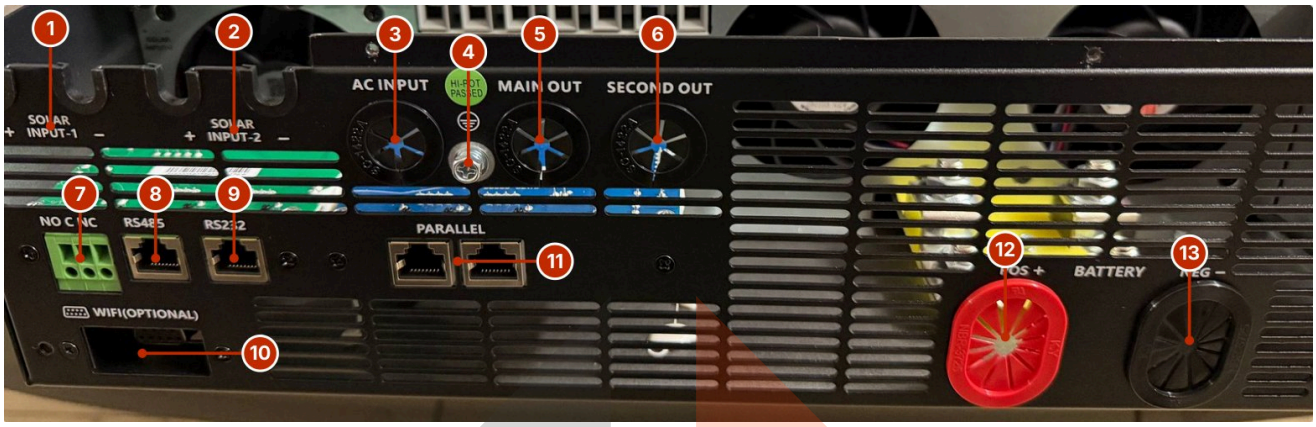
Inverter connectors: bottom panel



№	Connector	What it is	What connects where
1	**PV1 input**	First solar panel input (SOLAR INPUT-1, + and –). The PV connectors are under the cover.	Panel string via a separate DC switch. Up to 500 V open-circuit, MPPT 60–500 V, up to 18 A.
2	**PV2 input**	Second solar panel input (SOLAR INPUT-2, + and –), separate MPPT tracker.	Second panel string, likewise up to 500 V and 18 A.
3	**AC grid input**	Cable entry to the AC INPUT terminals: ⏚, L, N (under the cover).	Grid or generator via a separate 63 A breaker. 16 mm² cable.
4	**Grounding**	Case earthing point.	Earth wire (PE). The inverter must be connected to a permanent earthing system.
5	**Main output**	Cable entry to the MAIN OUT terminals: L, N (OP1).	Main load panel. Cut-off: F2-07.
6	**Second output**	Cable entry to the SECOND OUT terminals: L, N (OP2), up to 5.5 kW. Only in a single-inverter system.	Panel for loads that can be disconnected earlier. Enable: F1-11, cut-off: F2-08, schedule: F1-13/14.
7	**Dry contact**	NO · C · NC terminals, 3 A / 250 V AC.	Signal to an external device or earthing unit (mode: F0-16).
8	**RS485 (BMS)**	Port for communication with the lithium battery BMS (RJ45). Pins: 1 — RS485-B, 2 — RS485-A, 7 — RS485-A, 8 — RS485-B.	Communication cable from the BMS RS485 port (“pin to pin”, included). Battery type: F2-01.
9	**RS232 (RJ45)**	RS232 communication port.	Cannot be used at the same time as port 10.
10	**RS232 (DB9)**	RS232 communication port; labelled “WIFI (OPTIONAL)” on the case.	Cannot be used at the same time as port 9. The manual does not describe the Wi-Fi connection.
11	**Parallel**	Two parallel communication ports.	Parallel communication cable between inverters (only in a parallel system).
12	**Battery +**	Entry for the battery “plus” cable (POS +).	Battery plus 48 V via a separate 250 A / 60 V DC breaker. Cable 2 × 35 mm².

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№	Connector	What it is	What connects where
13	**Battery –**	Entry for the battery “minus” cable (NEG –).	Battery minus 48 V.

Photo with the terminal compartment cover removed; the ON/OFF switch is to the right of the battery entries (not in the photo).

Key values for this pair

20 % / 80 %
to grid / back to battery (F2-05 / F2-06)

15 %
output cut-off (F2-07)

Li2
battery type (F2-01)

50 A
max. total charge current (F2-09)

30 A
grid charging (F2-10)

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 (or 2×35 mm²),** M8 lugs): **red** from the battery “+” to the inverter “+ BAT”, **black** from the battery “–” to “– BAT”. Check the polarity twice: swapped “+” and “–” will 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 63 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.

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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.

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. On this battery the protocol is selected on its touchscreen: open the protocol settings in the screen menu (**PROTOCOL)** and check that **PYLON (** Pylontech) is selected for communication with the inverter. If a different protocol is set, select PYLON and confirm.
2. Plug the communication cable to the inverter into the battery’s **RS485 CAN** port. The pair of **RS485** ports on the right is only for linking batteries together.
3. For a single battery, do not change the address or the other BMS settings.

On the inverter:

1. Group **F2,** program **F2-01** (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 (a BMS communication warning on the screen) appears instead of percent, check the cable, port and protocol.
4. Once communication is established, the inverter takes the charge voltages (F2-03, F2-04) and cut-off (F2-07) from the battery. The values in the table below are used as a fallback if communication is lost.
5. SOC thresholds with BMS communication (SbU mode): **F2-05 —** switch to grid, **F2-06 —** return to battery: recommended **20%** switch to grid, **80%** return to battery.

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 ≈ **4.6 kW** of continuous load from the battery. The inverter delivers its full 11.0 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

Entering the menu: hold the **ENTER** button for 3 seconds, use **UP / DOWN** to choose a group (F0 general, F1 output, F2 battery), **ENTER;** then choose the program and value, **ENTER** to save, **ESC** to go back.

№	Parameter	Value	Why
F2-01	Battery type	**Li2**	Li2 = PYLON US2000 protocol. Li4 in this inverter is its own protocol, not Growatt, and does not suit our batteries.

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F1-01	Output source priority	**SUb (**no panels) or **SbU (** with panels)	SUb: solar, then the grid; the battery is kept full for power cuts. SbU: solar, then the battery, the grid when the battery has dropped to F2-05.
F2-02	Charging source priority	**SNU** (solar + grid)	Charging from both solar and grid. oSo: solar only.
F2-09	Maximum charging current (total)	**50 A**	Solar + grid together. The inverter allows 10–160 A; do not set more than the battery allows.
F2-10	Maximum grid charging current	**30 A**	Inverter range 5–120 A; must be lower than F2-09.
F0-01	Input voltage range	**APL (**grid) / **GNt** (generator)	APL: household appliances, 90–280 V. UPS: computers. GNt: running on a generator.
F0-04	Auto restart after overload	**LtE (**on)	The inverter resumes operation by itself.
F0-05	Auto restart after overheating	**ttE (**on)	The inverter resumes operation by itself.
F1-04	Output frequency	**50 Hz**	Standard for Ukraine and Europe.
F2-05	Switch to grid (SbU)	**20 %** SOC	With BMS communication, the thresholds are set in percent of charge.
F2-06	Return to battery (SbU)	**80 %** SOC	After recharging to this level, the inverter supplies power from the battery again.
F2-07	Output cut-off	**15 %** SOC (factory)	The inverter cuts the output before the battery reaches BMS protection.
F2-17	Equalization charge	**EdS (**off)	Not used for LiFePO4.

Programs as in the GSIKE GSK-11KP menu (groups F0–F4) according to the manufacturer's manual. Numbers such as "05" or "26" from standard menus do not apply here. After entering the settings, switch the inverter off and on again.

Which mode to choose

- **Backup during power cuts only (no panels):** F1-01 = SUb, F2-02 = 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:** F1-01 = SbU, F2-02 = SNU (or oSo — solar only). Solar power by day, battery at night, the grid only when the battery has dropped to 20 %.
- **Running on a generator:** F0-01 = GNt, F2-10 = 30 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	**≈ 41.5 h**
200 W	fridge + lights	**≈ 20.7 h**
300 W	fridge + lights + TV	**≈ 13.8 h**
500 W	fridge, laptop, pump	**≈ 8.3 h**
1000 W	boiler, kettle briefly, several appliances	**≈ 4.1 h**
2000 W	air conditioner, water heater, electric stove	**≈ 2.1 h**
4000 W	whole house, pump, power tools	**≈ 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: ≈ 54.4–56.8 V when full, ≈ 50.0 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 46.4 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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