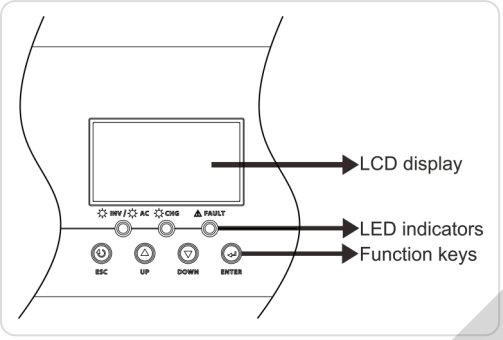
SETUP MANUAL · ENGLISH

Hybrid inverter ANENJI 4.2 kW 24 V

Model on the label ANJ-4000W-24V-WIFI · per the manufacturer's manual "Hybrid Solar Inverter/Charger 4.2KVA 230Vac" (371-00108-00)



Control panel (figure from the manual, p. 8).

Control panel

The front panel has a display, three indicators (AC/INV, CHG, FAULT) and four buttons.

ESC	UP	DOWN	ENTER
exit settings	previous item	next item	enter and confirm

How to change settings

1. Press and hold **ENTER** 3 seconds: the inverter enters settings mode.
2. Select the program with **UP / DOWN** (number at the top of the display).
3. Press **ENTER,** choose the value with **UP / DOWN** and confirm with **ENTER.**
4. **ESC** button: exit.



Most important: battery type, program 05.

For a lithium battery with RS485 link select LI2 (Pylon US2000 protocol) or LI4 (manufacturer protocol) ; without link, LIb. The default is AGn (AGM).

LEDs

Indicator	Steady	Flashing
AC / INV (green)	Output supplied from the grid (grid mode)	Output supplied from battery or sun (battery mode)
CHG (green)	Battery fully charged	Battery charging
FAULT (red)	Inverter fault	Warning

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Inverter bottom panel

Bottom panel: what goes where

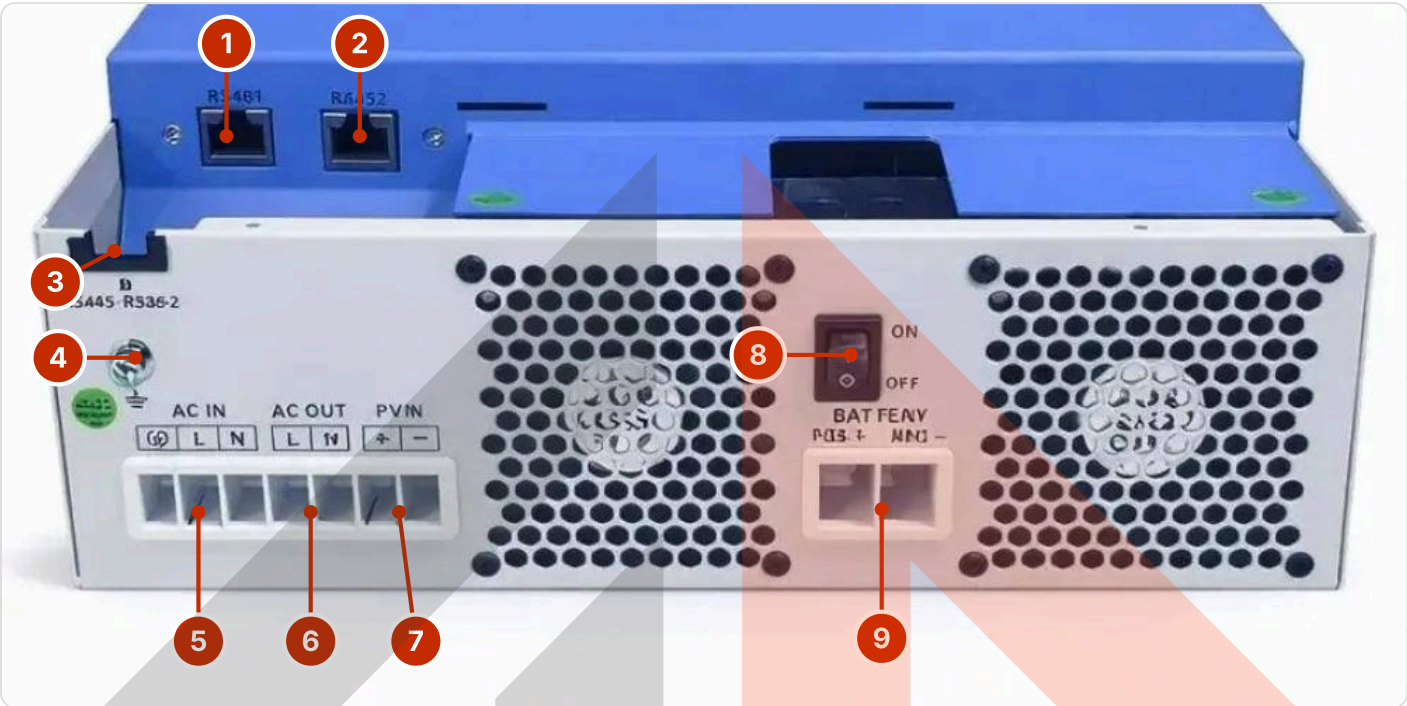

Photo of a real ANENJI inverter from below. Connector functions per the "Product overview" figure of the manual (p. 1): the labels in the photo are unclear, so check the port labels 1 and 2 against the sticker next to the ports on your inverter.

№	Port	What and why	What connects where
1	**RS485 (BMS)**	RJ45 port for RS485 communication with the lithium battery BMS (the left port in the manual's figure).	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	**RS232**	RS232 communication port (right port).	Only named in the manual; what exactly connects to it is not described.
3	**Cable opening**	Opening for the communication cables (marked RS485/RS232 in the manual's figure).	The cables to ports 1 and 2 pass through it.
4	**Grounding**	Case earthing screw.	Protective PE wire (yellow-green).
5	**AC IN (⏚ · L · N)**	Grid or generator input.	Via a separate 50 A breaker. Cable 6 mm². First PE, then L (brown/black) and N (blue).
6	**AC OUT (L · N)**	Output to loads (load panel).	6 mm² cable. Do not confuse with AC IN: the terminal blocks are marked "IN" and "OUT".
7	**PV IN (+ · –)**	Solar panel input.	Via a separate DC breaker. 4 mm² cable. Panel open-circuit voltage no more than 500 V.
8	**ON / OFF**	Inverter power switch.	Switch on after all cables are connected and the battery is attached.
9	**BATTERY (POS + · NEG –)**	Battery terminals 24 V.	35 mm² cable, a separate DC fuse or breaker. Check the polarity before connecting.

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SAFETY · CABLES · BREAKERS

What you need before connecting

Installation section of the manual (pp. 2–7)

Cables and protection (per the manual)

Section	Cable	Protection	Torque and notes
Battery	35 mm²	separate DC fuse or breaker rated **137 A**	2–3 N·m. Strip 18 mm, tin the end 3 mm. Recommended battery capacity: 100 Ah.
AC input (grid / generator)	6 mm²	separate breaker **50 A**	1.4–1.6 N·m. Strip 10 mm, L and N 3 mm shorter.
AC output	6 mm²	—	1.4–1.6 N·m. Do not mix up the “IN” and “OUT” blocks.
Solar panels	4 mm²	separate DC breaker	1.4–1.6 N·m. Typical current 15 A. Strip 10 mm.

Safety rules

- All connections must be made by a qualified specialist.
- Always install overcurrent protection (fuse or breaker) between the battery and the inverter; a disconnector is advisable.

- Before the final DC connection make sure: “plus” to “plus”, “minus” to “minus”.
- Put nothing between the flat part of the inverter terminal and the lug: it may overheat. Do not apply antioxidant to the terminals until they are tightened.
- Before connecting AC cables, switch off the DC (battery) protection and make sure the grid is disconnected.
- Air conditioners need 2–3 min to restart. Without a power-on delay a short grid outage may damage an air conditioner, and the inverter may report an overload fault.
- Mount only on concrete or another non-combustible surface, vertically, at eye level; ambient temperature 0–55 °C; clearances per the manual figure (20 cm at the sides, 50 cm above and below). Fixing: three M4 or M5 screws.

Battery voltage thresholds for AGM and flooded (per the manual)

Load	“Low battery” warning	Warning cleared	Cut-off (Low DC cut-off)
under 20 %	22.0 V	23.0 V	21.0 V
20–50 %	21.4 V	22.4 V	20.4 V
50 % and above	20.2 V	21.2 V	19.2 V

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Technical specifications

Output (battery mode)		AC input (grid)	
Rated power	**4.2 kVA / 4.2 kW**	Rated voltage	**230 V**
Waveform	**pure sine wave**	Range (Appliances / UPS)	**90–280 / 170–280 V**
Voltage	**230 V ±5 %**	Max. input voltage	**300 V**
Frequency	**50 or 60 Hz**	Frequency	**50 / 60 Hz (auto)**
Peak efficiency	**94 %**	Efficiency in grid mode	**>95 %**
Overload capacity	**2× rated 5 s**	Transfer time	**10 ms (UPS), 20 ms (Appliances)**
Battery and charging		**Solar panels (PV)**	
Rated voltage	**24 V**	Rated power	**4.5 kW***
Cold start voltage	**23.0 V**	Max. open-circuit voltage	**500 V**
Max. charge current (PV + AC)	**100 A**	MPPT range	**60–500 V**
Max. grid charge current	**80 A**	Max. input current	**15 A**
Bulk: flooded / AGM, gel	**29.2 / 28.2 V**	Max. PV charge current	**100 A**
Float voltage	**27 V**	**General**	
Overcharge protection	**32 V**	Operating temperature	**−10…+55 °C***
Charging algorithm	**3 stages**	Humidity	**5–95 % non-condensing**
Comm ports	**RS485 (BMS), RS232**	Dimensions (D×W×H), weight	**358×295×105 mm, 6.2 kg**

Data from the manual's Specifications tables (pp. 25–27). * The inverter label (photo ANJ-4000W-24V-WIFI) says otherwise: max. PV power **4000 W**, operating temperature – **10…50 °C**, protection IP **21**. Check the label on your inverter and go by the lower value.

Step-by-step connection

Step 1 Overview and mounting

Check that the box contains the inverter and manual and nothing is damaged. Fix the inverter vertically on a non-combustible wall with three M4/M5 screws, with 20 cm clearance at the sides and 50 cm above and below.

Step 2 Remove the bottom cover

Undo the two screws and remove the bottom cover to reach the terminals.

Step 3 Connect the battery

1. Fit a fuse or breaker between the battery and the inverter (typical current 137 A); it must be off.
2. Strip the 35 mm² cables by 18 mm.
3. Insert the cables squarely into the **BATTERY POS + / NEG –** terminals and tighten to 2–3 N·m. Check polarity on the battery and on the inverter.
4. For a lithium battery with BMS also connect the comm cable to the **RS485** port (p. 5).

Step 4 Connect the grid input (AC IN)

1. Make sure the battery DC protection is off and the grid is disconnected.
2. Fit a separate 50 A breaker between the grid and the inverter.
3. Strip the 6 mm² wires by 10 mm, shorten L and N by 3 mm.
4. First connect PE (⏚, green-yellow), then L (brown or black) and N (blue) to the **AC IN** block; tighten to 1.4–1.6 N·m.

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Step 5 Connect the output (AC OUT)

In the same way connect the consumer panel cable to the **AC OUT** block: first PE, then L and N. Make sure the wires are firmly fixed.

Step 6 Connect the solar panels (PV IN)

1. Fit a separate DC breaker between the panels and the inverter.
2. The string open-circuit voltage (Voc) must not exceed 500 V and must be above the minimum battery voltage; MPPT operating range 60–500 V, input current up to 15 A.
3. Strip the 4 mm² cables by 10 mm, check polarity and connect “+” to “+”, “–” to “–” on the PV IN block.

Manual example: 450 W panels (Voc 41.25 V): 2 to 10 in series (up to 4500 W); 550 W panels (Voc 50.32 V): 2 to 8 in series or 2 strings of 4 (4400 W).

Step 7 Refit the cover and switch on

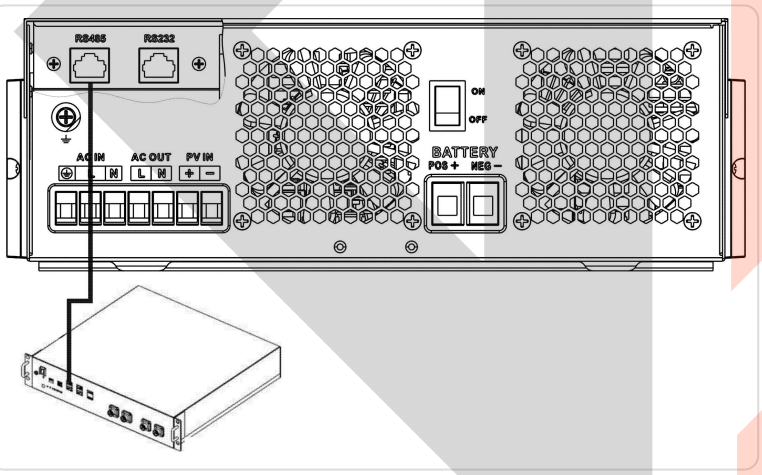
Refit the bottom cover (two screws). Switch on the battery DC protection, then press the **ON/OFF** switch on the bottom panel. Then select the battery type in program 05 and the other settings.

LITHIUM BATTERY

Settings for a lithium battery

Setting for lithium battery section of the manual (pp. 18–22)

The manufacturer states: use only lithium batteries compatible with the inverter. A lithium battery has two connections: the power cable (as for lead-acid) and the RS485 comm cable from the BMS.



RJ45 pin	RS485 port
1	RS485-B
2	RS485-A
7	RS485-A
8	RS485-B

Cable: “pin to pin”.

Manual figure: comm cable from the battery BMS port to the inverter RS485 port.

Battery with link (BMS)

1. Connect the power cable and the RS485 cable.
2. In program **05** select **LI2** (Pylon US2000, protocol 3.5) or **LI4** (manufacturer protocol) .
3. Check programs **41–45.** Programs 43/44/45 are available only with a working link and replace 12/13/29 (those become unavailable).

With a working link the **Li** icon blinks on the display, and the BMS max. charge voltage, max. charge current and SOC are shown. Li blinking once every 1 s: battery discharge forbidden; once every 2 s: charging forbidden. No link: warning **19.**

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Pylontech US2000: DIP switch 1 ON (baud rate 9600), switches 2–4: group address (on the first battery). Order: RS485 cable → switch the battery on → hold the battery button over 3 s → switch the inverter on → program 05 = **LI2.**

Lithium battery without link (LIb)

First find in the BMS specifications: max. charge voltage, max. charge current, discharge protection voltage. Then:

Program	What to set
05	**LIb**
26	C.V voltage = BMS max. charge voltage − 0.5 V
27	float voltage = value of program 26
29	cut-off ≥ BMS discharge protection voltage + 2 V
02	max. charge current below the BMS max. charge current
12	(for SbU / SOL) ≥ value of program 29 + 1 V, otherwise a low battery voltage warning appears

Configure while the inverter gives no output (only the display is lit), and restart the inverter after configuring.

SETTINGS MENU

All menu programs

The display image shows the default value as drawn in the manual. Grey “888”: the manual has no display figure for this program. Programs 04, 14, 15, 17, 21, 22, 24, 28, 30, 31, 38, 40 are not in the manual.

Priorities and operating mode



01 Load supply source priority

- **UtI — grid first** (default). The grid powers the load; solar and battery power it only when there is no grid.
- **SOL — solar first.** Solar powers the load; if it is not enough, the battery is added at the same time. The grid powers the load only when there is no sun or the battery voltage has fallen to the warning level or to the value of program 12.
- **SbU — solar, battery, grid.** Solar powers the load, together with the battery when short. The grid powers the load only when the battery voltage has fallen to the warning level or to the value of program 12.
- **SUb — solar, grid, battery.** Solar first charges the battery, then powers the load; if it is not enough, the grid is added at the same time.
- **SUF.** If solar is enough for the load and battery charging, the surplus may be exported to the grid. If solar is short, the grid powers the load at the same time.



03 AC input voltage range

- **APL — household appliances** (default): 90–280 V.
- **UPS:** 170–280 V.
- **Gnt — generator:** 170–280 V, compatible with generators. Because the generator is unstable, the inverter output may also be unstable.

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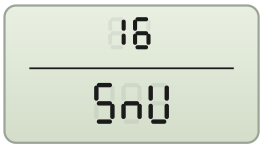


16 Battery charging source priority

Applies when the inverter is in grid, standby or fault mode:

- **CSO — solar first:** solar charges, the grid only when there is no sun.
- **SnU — solar and grid** (default): both charge at once.
- **OSO — solar only:** only solar charges, even if the grid is present.

In battery mode only solar can charge (if there is enough).



10 Automatic bypass

nnL — manual (default) or **AtO — auto.** In “auto”, if the grid is normal the inverter switches to bypass automatically, even with the switch off.



23 Bypass on overload

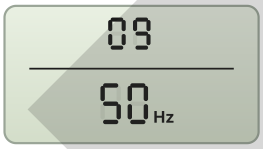
byE — on (default): on overload in battery mode the inverter switches to grid mode. **byd:** off.

Output



08 Output voltage

230 V by default. 220, 230 or 240 V can be selected.



09 Output frequency

50 Hz default or 60 Hz.



06 Auto restart after overload

LtE — on (default). **Ltd:** off.



07 Auto restart after overheating

ttE — on (default). **ttd:** off.

Charging and battery type



05 Battery type

- **AGn — AGM** (default).
- **FLd:** flooded.
- **USE — user settings:** charge and cut-off voltages are set in programs 26, 27, 29.

- **LI2:** lithium battery with PYLON US2000 protocol version 3.5 (RS485 link).
- **LI4:** lithium battery with the standard protocol of the inverter maker (in the manual: “LIx”).
- **LIb:** lithium battery without link: factory values suit such a battery; charge and cut-off voltages are set in programs 26, 27, 29.

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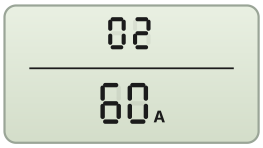
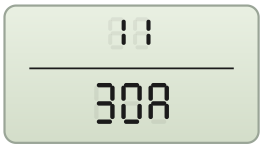


02 Maximum charge current (solar + grid)

60 A by default. Range: from the grid charge current (program 11) to the max. charge current per specification (100 A). The value cannot be below program 11.



11 Maximum grid charging current

30 A by default. Range 2 A up to the max. per specification (80 A).



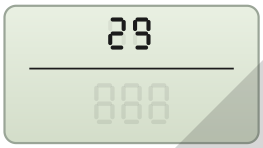
26 Constant voltage charge voltage (C.V, bulk)

Adjustable if USE or LIb is selected in program 05 (as stated in the description of program 05). Default **28.2 V,** range 24.0–30.0 V, step 0.1 V. Not below program 27.



27 Float voltage

Adjustable with USE or LIb. Default **27.0 V,** range from 24.0 V to the value of program 26.



29 Cut-off voltage (Low DC cut-off)

Adjustable with USE or LIb. Default **21.0 V,** range 20.0–27.0 V, step 0.1 V; must be below program 12. Cut-off happens at this voltage regardless of load.



32 Constant voltage charge time (C.V)

AUt — auto (default): the inverter sets the time itself. Or 5–900 min in 5 min steps. Adjustable if USE is selected in program 05.

Switching between grid and battery (SbU and SOL modes)



12 Battery voltage to switch to grid

Applies when SbU or SOL is selected in program 01. Default **23 V,** range 22.0–28.6 V; must be below program 13.



13 Battery voltage to return to battery mode

FUL — after full charge (default) or from 24 V to (value of program 26 – 0.4 V); must be above program 12.

Lithium battery with link (BMS)



41 Automatic lithium battery activation

nnL — off (default). **AtO:** if a linked lithium battery is selected in program 05 and no battery is detected, the inverter activates it automatically once. To enable auto-activation the inverter must be restarted.

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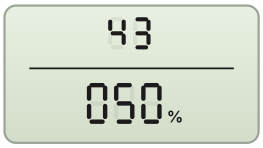
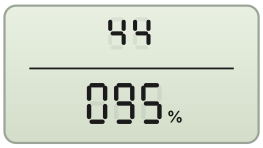
42 Manual lithium battery activation

nOP — off (default). **ACt:** if no battery is detected, you can activate it manually once.



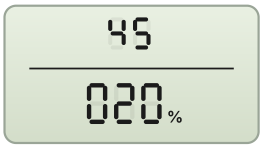
43 SOC for switching to grid

Applies in SbU and SOL modes only with a working BMS link (replaces program 12). Default **50 %,** range 5–50 %; must be above program 45.



44 SOC for returning to battery operation

Only with a working BMS link (replaces program 13). Default **95 %,** range 60–100 %.



45 Cut-off SOC (Low DC cut-off SOC)

Only with a working BMS link (replaces program 29). Default **20 %,** range 3–30 %; must be below program 43.



46 Max. discharge current protection

OFF by default (function off). A numeric value in amps (the manual figure shows 500 A as an example; the manual gives no range). Single inverter only. If the discharge current exceeds the setting: with grid present the inverter switches to grid and battery discharge stops; without grid a warning appears and discharge continues.

Equalization charge

For flooded batteries and type USE only (program 33). Once enabled, equalization starts at the interval (program 37) or immediately (program 39) during float: the inverter charges to the equalization voltage (34) and holds it for the set time (35). If the voltage is not reached, the time is extended up to the limit (36), after which the inverter returns to float.



33 Equalization charge

EdS — off (default), **EEn:** on. Adjustable only with battery type FLd or USE.



34 Equalising voltage

Default **29.2 V,** range from the float voltage to 30 V, step 0.1 V.



35 Equalization time

Default **60 min,** range 0–900 min.



36 Equalization time limit

Default **120 min,** range 0–900 min.

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37 **Equalising interval**

Default **30 days,** range 1–90 days.



39 **Start equalising now**

AdS — off (default). **AEn:** equalization starts at once, the main screen shows “E9”. Available if equalization is enabled in program 33.

Display, sound, communication



18 **Buzzer mode**

- **nd1:** buzzer off.
- **nd2:** sound when the input source changes or on certain warnings and faults.
- **nd3:** sound on certain warnings and faults.
- **nd4** (default): sound on faults only.



19 **Return to main screen**

ESP (default): after 1 min without key presses the display returns to the main screen (input / output voltage). The other option is to stay on the last screen.



20 **Backlight**

LOn — on (default), **LOF:** off.



25 **Modbus address**

Default **001,** range 001–247.

DISPLAY CODES

Faults and warnings

Fault codes (red FAULT lit)

Code	Fault
01	Inverter module overheat
02	DC/DC module overheat
03	Battery voltage too high
04	PV module overheat
05	Output short circuit
06	Output voltage too high
07	Overload: allowed time used up
08	Bus voltage too high
09	Bus soft start failed

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10	PV overcurrent
11	PV overvoltage
12	DC/DC overcurrent
13	Overcurrent or current surge
14	Bus voltage too low
15	Inverter fault (self-test)
18	Op current sensor offset too large
19	Inverter current sensor offset too large
20	DC/DC current sensor offset too large
21	PV current sensor offset too large
22	Output voltage too low
23	Negative inverter power

Warnings (red FAULT blinking)

Code	Warning	Beeper
02	Temperature too high	3 beeps every second
04	Low battery	1 beep every second
07	Overload	1 beep every 0.5 s
10	Output power derating	2 beeps every 3 s
14	Fan blocked	silent
15	Low PV energy	2 beeps every 3 s
19	No link with lithium battery (BMS)	1 beep every 0.5 s
21	Lithium battery overcurrent	silent
E9	Equalization charge	silent
bP	Battery not connected	silent

What to do if...

Problem	Possible cause	What to do
The inverter turns off during start-up: display, indicators and buzzer work for 3 s and go out	Battery voltage too low	Charge or replace the battery
Nothing lights up after switching on	Battery voltage too low or reversed polarity	Check the battery and connections; charge or replace the battery
Grid present, but the display shows input voltage 0, green indicator blinking	Input protection tripped	Check the breaker and AC wiring
Grid present, but the inverter runs on battery, green indicator blinking	Poor grid or generator quality; or “solar first” is selected	Check wire size and length, the generator, program 03 (UPS / Appliances); or select “grid first” in program 01
Relay keeps clicking at switch-on, display and indicators blink	Battery disconnected	Check the battery cables
Code 07	Overload 110 %, time used up	Reduce the load
Code 05	Output short circuit	Check the wiring, remove the faulty load
Code 02	Internal component temperature above 100 °C	Check that airflow is not blocked and the ambient temperature is not too high
Code 03	Battery overcharged or battery voltage too high	Check the battery type and number; otherwise service

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Code 06 / 22	Output voltage below 190 V or above 260 V	Reduce the load; otherwise service
Code 08 / 09 / 15	Internal component fault	Service
Code 13 / 14	Overcurrent / low bus voltage	Restart; if it repeats, service
Other code	—	If the wiring is correct, service