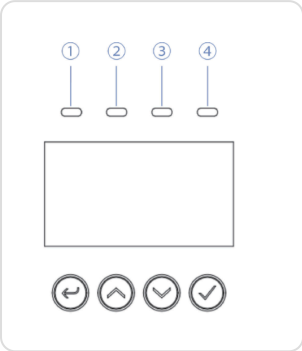
CONNECTION AND SETUP GUIDE

Hybrid inverter POWGROW SMS-5kW 5 kW 24 V

Connection, cables, bottom panel, display menu (items 01–61), battery setup, fault and warning codes



Control panel (figure from the manufacturer's manual): ① AC, ② INV, ③ CHG, ④ FAULT.

Control panel

Front panel: display, four indicators (AC, INV, CHG, FAULT) and four buttons.

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

How to change settings

1. Press and hold **ENTER** 2 seconds: the inverter enters settings mode.
2. Use **UP / DOWN** to choose the item (program) number.
3. Press **ENTER** and choose the value with **UP / DOWN**.
4. Press **ENTER** to confirm or **ESC** to exit.



Most important: battery type is item 17.

Item 05 on this inverter is the **charging source priority,** not the battery type. Item 17 defaults to **AGM.** For lithium iron phosphate (LiFePO4) choose **FEL,** for ternary lithium **LIb.** BMS link: item 44.

Front panel indicators

Indicator	Steady	Flashing	Off
● ① **AC** (green)	Grid normal, inverter runs from grid	Grid normal, but the inverter has not switched to it yet	Grid abnormal
● ② **INV** (yellow)	Output fed from battery or solar in battery mode	—	Other states
● ③ **CHG** (yellow)	Battery in float stage	Battery charging at constant voltage (CV)	Other states
● ④ **FAULT** (red)	Inverter fault	Warning	Inverter working normally

Where this manual comes from. POWGROW SMS-5kW 24V is built on the manufacturer's factory platform: case and specifications match (charge 160 A, PV 27 A / 9000 W, MPPT 60–450 V, 410×336×110 mm). Menu, terminals, cables and codes below are taken from the original manual of this exact model. If any item or value on your display differs, go by the display and the label on the case.

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SPECIFICATIONS AND SAFETY

Technical data POWGROW SMS-5kW 24 V

Per the manufacturer's datasheet

AC output		AC input (grid)	
Rated power	**5 kW**	Rated voltage	**208 / 220 / 230 / 240 V; L + N + PE**
Peak power	**10 kVA**	Voltage range	**90–280 ±3 V (normal mode); 170–280 ±3 V (UPS)**
Voltage	**208 / 220 / 230 / 240 V**	Frequency	**50 / 60 Hz (auto-detect)**
Frequency	**50 / 60 Hz ±0.1 %**	Transfer time	**10 ms**
Waveform	**pure sine wave**	Power factor	**1**
Overload (on battery)	**1 min at 102–120 %; 10 s above 120 %**	Max. efficiency (battery)	**93.5 % at 24 V**
Solar panels (PV)		**Battery**	
Controller type	**MPPT**	Rated voltage	**24 V**
Max. PV current / power	**27 A / 9000 W**	Float voltage	**27 V**
MPPT range	**60–450 V**	Overcharge protection	**30.5 V**
Max. open-circuit voltage	**500 V**	Battery type	**lithium and lead-acid**
Max. PV charge current	**160 A**	Max. grid charge current	**160 A**
Max. charge current (PV + grid)	**160 A**	Parallel operation	**no (NA)**
General			
Interfaces	**RS232 / RS485 / CAN**	Monitoring	**Wi-Fi (built-in)**
Enclosure rating	**IP21**	Operating temperature	**−10...+60 °C**
Humidity	**5–95 % non-condensing**	Storage temperature	**−15...+60 °C**
Weight	**8.4 kg**	Dimensions (H×W×D)	**410×336×110 mm**
Altitude	**up to 4000 m (derating above 1000 m)**	Display	**LCD**

Safety (manufacturer's manual, section 1.5)

- Decide in advance which battery system you are installing, lithium or lead-acid. With the wrong choice the storage system will not work properly.
- Before use read all instructions and warning marks on the inverter, batteries and in this manual.
- Connection must be done by a qualified electrician; all wiring per local electrical safety rules.
- If you install solar panels in daytime, cover them with opaque material: panel terminals carry high voltage in the sun.
- Charge only deep-cycle lead-acid and lithium batteries. Other types may explode.
- Do not disassemble the inverter: repairs only at a service centre. Wrong reassembly risks electric shock or fire.
- Before servicing or cleaning disconnect all cables: switching off with the button does not remove the danger. Start servicing at least 5 minutes after disconnecting all power sources (mark on the case).
- Never charge a frozen battery.
- Choose cable sizes per the recommendations below.
- Take care with metal tools near batteries: a dropped tool can cause a spark or short circuit and an explosion.
- When disconnecting AC or DC terminals, follow the order in the installation section.
- The inverter must be connected to a permanent earth.
- Never short the AC output and DC input. Do not connect the grid if the DC input is shorted.
- Switch the inverter on only fully assembled (with the bottom cover fitted).
- Do not disconnect under load (mark on the case).

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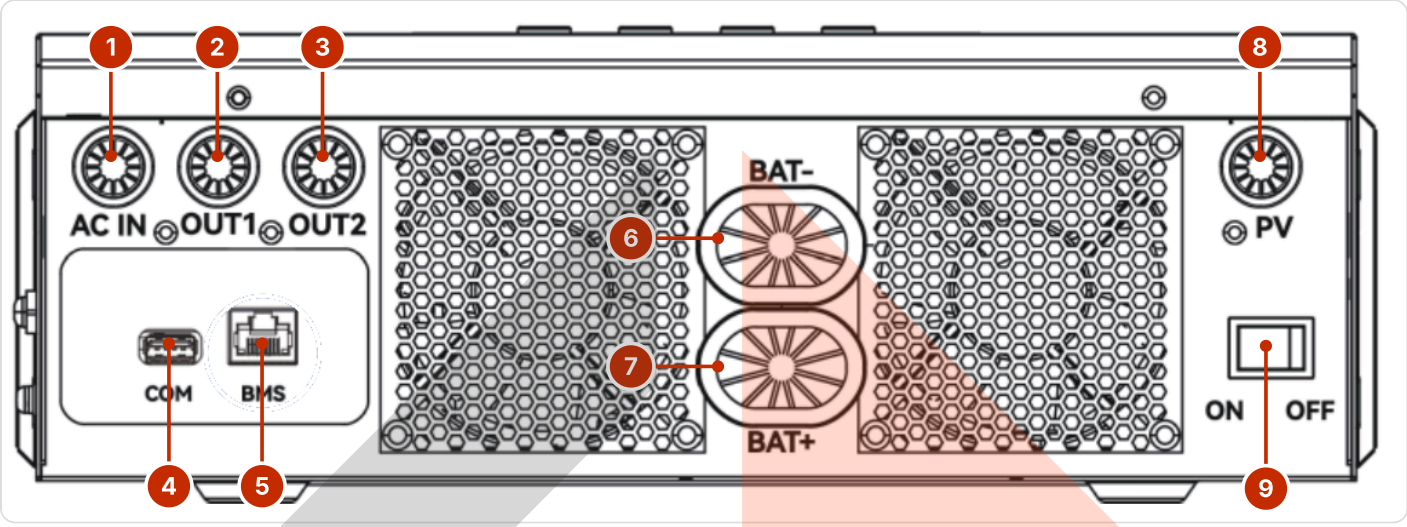
Bottom panel and terminals

Bottom panel: what goes where



View of the inverter from below: figure from the manufacturer's manual (section 3.5.2). We have no photo of this exact model's panel. Numbers in the figure match the table.

	Port	What and why	What to connect
1	**AC IN**	Grid or generator input (L, N, PE).	Cable from the grid via a separate **40 A** breaker. Generator also 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 (stick) plugs in here directly.
5	**BMS**	RJ45 port for communication with the lithium battery BMS, RS485 or CAN.	Comms cable from the battery BMS. Protocol: item 44.
6	**BAT–**	Battery "minus" cable entry.	Battery negative, 50 mm² cable.
7	**BAT+**	Battery "plus" cable entry.	Battery plus via a **250 A** fuse / disconnector.
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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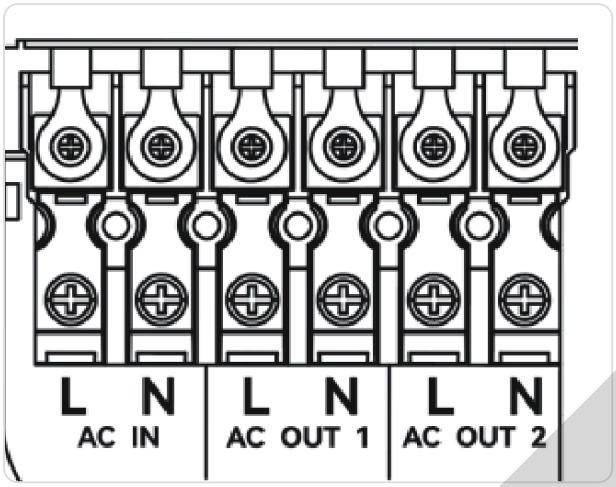
Terminals under the bottom cover



AC block: figure from section 3.3 of the manufacturer's manual.

Remove the bottom cover (four screws). On the left beneath it is the AC block: **AC IN** (L, N), **AC OUT1** (L, N), **AC OUT2** (L, N). On the right: **PV+** and **PV–** terminals, in the middle: **BAT+** and **BAT–.**

Do not mix up input and outputs. Observe polarity: L and N for AC, "+" and "–" for PV and battery.

BMS port (RJ45): pin assignment

Pin	Signal
1	**RS485B**
2	**RS485A**
3	—
4	**CANH**
5	**CANL**
6, 7, 8	—

The BMS cable must be wired pin to pin. Link via RS485 or CAN.

For the inverter to exchange data with the BMS, choose type **LIb** or **FEL** in item **17,** and your BMS protocol in item **44.**

INSTALLATION AND CONNECTION

Cables, protection and step-by-step connection

All values from section 3 "Installation" of the manufacturer's manual.

Cables and protective devices

Section	Cable	Protection	Note
AC input (grid / generator)	6 mm²	separate AC breaker **40 A**	between inverter and source, for safe isolation
Outputs AC OUT1 / OUT2	4 mm²	—	the manual gives no breaker rating for the outputs
Solar panels (PV)	6 mm²	separate DC breaker	the manual gives no DC breaker rating; panel Voc ≤ 500 V and above start voltage 60 V; MPPT 60–450 V
Battery 24 V	50 mm², DT lugs	fuse / disconnector **250 A**	battery of at least 200 Ah recommended; for lead-acid charge current 0.3C

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Step-by-step connection

Step 1 Inspect the inverter and choose a location

- Check the packaging and inverter for damage; if any, contact the seller.
- Mount only on concrete or another non-combustible solid surface, vertically, at eye level.
- Ambient temperature −10...+60 °C. Leave 30 cm free on all sides for cooling and cable routing.

Step 2 Fix the inverter

- Drill two holes with a φ8 drill 200 mm apart, insert anchors (M6 recommended).
- Hang the inverter vertically on the screws.
- Remove the bottom cover by unscrewing four screws.

Step 3 Connect the AC input (grid)

- Fit a separate 40 A AC breaker between inverter and grid and **switch it off.**
- Strip 12 mm of insulation, trim the conductor to 10 mm, crimp ferrules (ring lug for PE).
- First connect the protective conductor **PE** (yellow-green) on the inverter side, then **L** (brown or black) and **N** (blue) to the AC IN terminals.
- Do not mix up input and outputs, and do not swap L and N.

Step 4 Connect outputs AC OUT1 and OUT2

- Same as the input: L and N, 4 mm² cable.
- Air conditioners need 2–3 minutes before restarting. If the grid drops and quickly returns, the inverter may register an overload. Check whether the air conditioner has a start delay function.

Step 5 Connect the solar panels

- Fit a separate DC breaker between inverter and panels and **switch it off.**
- Do not earth panel “+” or “−”. Panel open-circuit voltage no more than 500 V and above 60 V.
- Crimp ferrules, check polarity with a tester, connect **PV+** (red) and **PV−** (black).
- Do not switch on DC and AC breakers until all connections are complete.

Step 6 Connect the battery

- Fit a 250 A fuse or disconnector between battery and inverter.
- Crimp two DT lugs on 50 mm² cable, pass the cable through the hole at the bottom of the case, tighten the BAT+ and BAT− terminals.
- Check polarity: “+” to “+”, “−” to “−”. Put nothing between the terminal face and the lug and do not apply anti-oxidant before tightening.
- For a 24 V lead-acid battery choose AGM or FLD in item 17.

Step 7 Lithium battery: BMS comms cable

- Check that the BMS protocol is compatible with the inverter.
- Connect the RJ45 cable to the inverter’s **BMS** port and to the battery comms port (RS485 or CAN).
- In item 17 choose **LIb** or **FEL,** in item 44 the BMS protocol.

Step 8 Wi-Fi (if needed)

Plug the Wi-Fi module (stick) directly into the **COM** port. Some models have built-in Wi-Fi.

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Step 9 **Close the cover and switch on**

- Refit the bottom cover with four screws.
- Switch on the inverter with the **ON/OFF** switch on the bottom panel.

DISPLAY AND BATTERY

Using the display and battery setup

What the display shows

Information is switched with the **UP** and **DOWN** buttons. If nothing is pressed for a long time, the bottom of the screen shows the day's solar yield (e.g. 2.5 kWh).

Page	Shows
P1	Solar yield per day
P2	Total solar yield
P3	Lithium battery voltage and current
P4	Lithium battery temperature and SOC
P5	Rated and remaining lithium battery capacity
P6	Max. charge and min. discharge voltage of the lithium battery
P7	Max. charge and discharge current of the lithium battery
P8	Lithium battery warnings and faults
P9	Inverter firmware version

P3–P8 are shown only with the BMS link on (item 44); without a link they show ERR.

Default voltages for each battery type

When you choose the type in item 17, the inverter fills in these values itself. In brackets: the range in which a value can be changed.

Item	AGM	FLD	LIb	FEL (LiFePO4)	CUS
15 switch to grid	23 22–26	23 22–26	23.8 20–25	24.8 20–25	23.8 20–25
16 return to battery	26 24–29	26 24–29	27.2 23–29	26.2 23–29	27.2 23–29
18 "low" warning	22*	22*	23.8 20.6–25	24 20.6–25	as LIb
19 shutdown	21*	21*	23 20–24	21 20–24	as LIb
20 CV charge	28.2*	29*	28.2 24–30	27.6 24–30	** 24–30
21 float	27*	27*	27.6 25–29	27.2 25–29	27.6 24–30
31 equalising	29.2 24–30	29.2 24–30	29.2 24–30	28 24–30	29.2 24–30

Values in volts. *: not adjustable for AGM and FLD. **: for CUS the manufacturer's manual gives a default of "56.4 V", clearly an error for the 24-volt model; check the value on the display.

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AGM	lead-acid AGM (default)
FLD	flooded lead-acid
LIb	ternary lithium
FEL	lithium iron phosphate (LiFePO4)
CUS	user settings

Li battery

1. Connect the battery power cables and the BMS comms cable to the **BMS** port (pinout in “Bottom panel and terminals”).

2. Item **17: FEL** for LiFePO4 or **LIb** for ternary lithium.
3. Item **44:** your BMS protocol: CVT, PYL, GRO, VOL, IRO or PAR. Leave item **45** at **AtO** (auto address search).
4. Then items **46–48** (shutdown and switching by SOC) and **40** (second output shutdown by SOC) take effect.
5. Item **61:** battery discharge current limit (default 190 A).

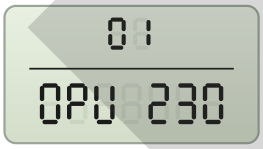
Do not enable equalising charge (items 31–35) with lithium batteries: the manufacturer’s manual says so directly.

SETTINGS MENU

All display menu items

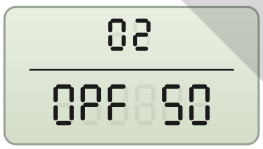
The display image matches the figure in the manufacturer’s manual. Items 27, 28, 30, 41–43, 49–60 and 62–65 do not exist in this model’s menu.

Output and operating modes



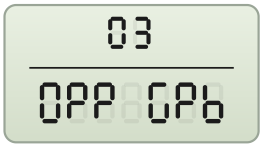
01 Output voltage

230 V by default. Options: 208, 220, 230, 240 V.



02 Output frequency

50 Hz by default. Options: 50 or 60 Hz.



03 Load supply source priority

- **Grid first** (default). The grid feeds the loads; solar charges the battery, and if solar is not enough, the grid charges it too. If the grid is not enough, solar is added, then the battery.
- **Solar first.** Solar feeds the loads; surplus charges the battery. If solar is not enough, the grid is added and surplus charges the battery. If both are not enough, the battery is added.
- **PBG: solar, then battery, then grid.** If solar is not enough, the battery supplies energy; if solar and battery are not enough, the grid feeds the loads.
- **MKS: generator first.** Generator + solar + battery: works like PBG. Generator + battery (no solar) or generator + solar (no battery): works like “grid first”.

In all modes: if solar, grid and battery together are not enough, the inverter goes to standby and charges the battery.

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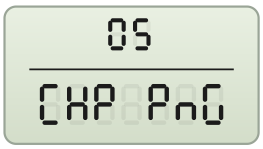
04 AC input mode

- **APP:** household appliances (default), transfer 10 ms.
- **UPS:** computers and other equipment, transfer 10 ms.
- **GEN:** generator on AC IN, transfer 20 ms.



05 Battery charging source priority

- **PNG:** solar and grid charge together (default).
- **OPV:** solar charging only.
- **PVF:** solar first: with both solar and grid, solar charges; with grid only, the grid.

> Item 05 is the **charging source**, not the battery type. Battery type is item 17.

Charging current



06 Grid charging current

80 A by default. Options: 2, 10, 20 … 160 A in 10 A steps.



07 Maximum charge current (solar + grid)

120 A by default. Options: 2, 10, 20 … 160 A in 10 A steps.

Battery



17 Battery type

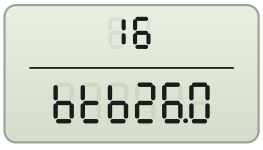
- **AGM:** lead-acid AGM (default).
- **FLd:** flooded lead-acid.
- **Llb:** ternary lithium.
- **FEL:** lithium iron phosphate (LiFePO4).
- **CUS:** user settings.

The type sets items 15, 16, 18–21 and 31 (table “Default voltages for each battery type”). For AGM and FLD some voltages cannot be changed.



15 Battery voltage to switch to grid

AGM / FLD	Llb	FEL (LiFePO4)	CUS
23 V 22–26 V	23.8 V 20–25 V	24.8 V 20–25 V	23.8 V 20–25 V



16 Battery voltage to return to battery mode

AGM / FLD	Llb	FEL (LiFePO4)	CUS
26 V 24–29 V	27.2 V 23–29 V	26.2 V 23–29 V	27.2 V 23–29 V



18 Warning: low battery voltage

AGM / FLD	Llb	FEL (LiFePO4)	CUS
22 V fixed	23.8 V 20.6–25 V	24 V 20.6–25 V	as Llb

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19 Battery discharge cut-off

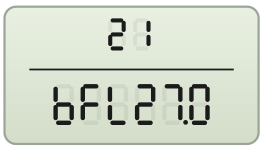
AGM / FLD	LIb	FEL (LiFePO4)	CUS
21 V fixed	23 V 20–24 V	21 V 20–24 V	as LIb



20 Constant voltage (CV) charge voltage

AGM / FLD	LIb	FEL (LiFePO4)	CUS
AGM 28.2 V FLD 29 V fixed	28.2 V 24–30 V	27.6 V 24–30 V	24–30 V

CV voltage must be above float voltage (item 21). For CUS the manual gives a wrong default (56.4 V): check on the display.



21 Float voltage

AGM / FLD	LIb	FEL (LiFePO4)	CUS
27 V fixed	27.6 V 25–29 V	27.2 V 25–29 V	27.6 V 24–30 V



29 Battery disconnect signal

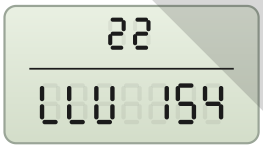
OFF by default: no alarm when the battery is disconnected.



61 Maximum battery discharge current

190 A by default, range 10–190 A in 5 A steps. If discharge current exceeds the limit: warning 60; if it lasts 5 s: fault 14. OFF: the inverter does not limit discharge current; above 190 A for a long time there is a risk of overheating.

Grid and grid feed-in



22 Grid voltage lower limit

APP and GEN input modes: 90–154 V, default **154 V.** UPS mode: 170–200 V, default **185 V.**



23 Grid voltage upper limit

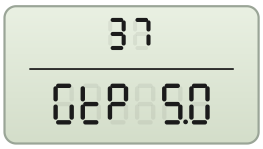
APP and GEN: 264–280 V, default **264 V.** UPS: always 264 V.



36 Grid feed-in

OFF: no export to the grid. **INT:** exports according to the priority in item 03:

- Solar first, battery charged enough: solar exports the maximum to the grid, surplus charges the battery.
- Solar first, battery not charged enough: solar charges the battery first, surplus goes to the grid.
- Grid first and PBG: solar charges the battery at maximum, surplus goes to the grid.
- MKS: no export to the grid.



37 Maximum grid export power

5.0 kW by default, range 0–5.0 kW, step 0.5 kW.

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Lithium battery: BMS link and state of charge (SOC)



44 BMS communication

OFF by default. Choose your BMS protocol, and the inverter will receive battery data from it:

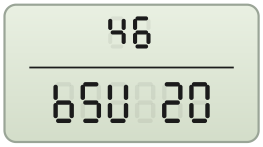
CVT CVTE (485)	**PYL** PYLON (485 and CAN)	**GRO** GROWATT (485 and CAN)
VOL VOLTRONIC (485)	**IRO** China Tower (485)	**PAR** PACE RTU (485)

If the link fails, warning 56 appears and the inverter stops following BMS data.



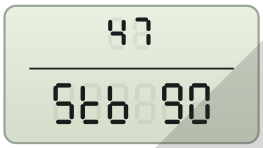
45 BMS address (BMS ID)

AtO (auto) by default: the inverter tries addresses from low to high and locks the first that answers correctly. Can be set manually 0–15 (A–F = 10–15).



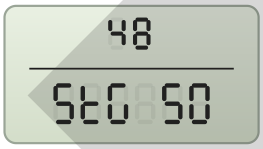
46 Low-SOC cut-off

Default **20 %,** range 5–50 %. When SOC in battery mode falls to the setting, the inverter shuts down with warning 68 (cleared at SOC = setting + 5 %). From standby the inverter goes to battery only at SOC ≥ setting + 10 %, otherwise warning 69. OFF: no SOC action. If the BMS link is lost, the inverter ignores SOC and clears these warnings.



47 Grid to battery transfer at high SOC

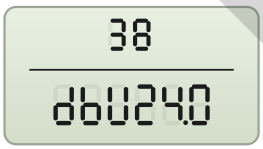
Default **90 %,** range 10–100 %. In PBG mode the inverter switches from grid to battery when SOC is above the setting **and** battery voltage is above item 16. OFF: no SOC-based transfer.



48 Battery to grid transfer at low SOC

Default **50 %,** range 10–90 %. In PBG mode the inverter switches to grid when SOC is below the setting **or** battery voltage is below item 15. OFF: no SOC-based transfer. If the value is above item 47, after the next switch-on items 47 and 48 stop working.

Second output (OUT2)



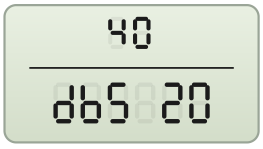
38 Second output shutdown by battery voltage

In battery mode the second output switches off when voltage drops below the setting and back on when it rises above the setting + 1 V per additional cell. Default **24 V,** range 22–30 V.



39 Second output run time on battery

In battery mode the second output switches off when discharge time reaches the setting: 5–900 min. **FUL:** no time limit. The manual text gives OFF as default (function disabled), the figure of the display shows FUL; check on your inverter.



40 Second output shutdown by SOC

In battery mode the second output switches off when SOC is below the setting and back on when it is 5 % higher. Default **20 %,** range 5–90 % or OFF.

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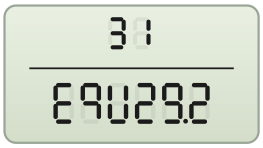
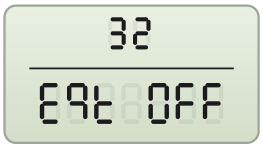
Equalization charge



31 Equalization charge voltage

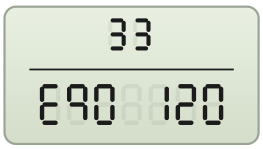
Equalising charge is for lead-acid batteries. Do not enable it with lithium.

FEL: **28 V,** range 24–30 V. AGM, FLD, LIb, CUS: **29.2 V,** range 24–30 V.



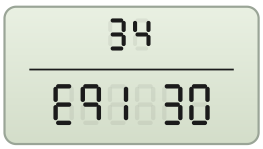
32 Equalization charge time

OFF by default (function disabled). Value 5–900 min, step 5 min: the inverter charges the battery to the voltage in item 31 and holds it for the set time.



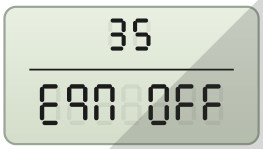
33 Equalising charge extension

If the time is up and the voltage in item 31 is not reached, charging is extended by this time; then the battery goes to float. Default **120 min,** 5–900 min, step 5 min.



34 Equalization charge interval

How often to run equalising: default **30 days,** 1–90 days.



35 Start equalising now

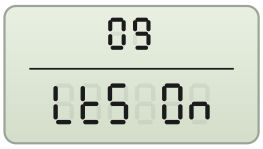
OFF by default. ON: equalising starts at once in float stage, when the function is enabled and the battery is connected.

Display, buzzer and protections



08 Return to main screen

ON: after 1 min without presses the display returns to the first page. OFF: stays on the current one.



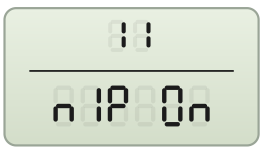
09 Auto restart after overload

ON by default.



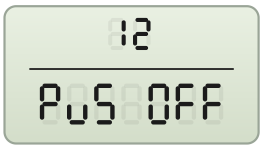
10 Auto restart after overheating

ON by default.



11 Alarm on grid or solar loss

ON by default: when the grid fails, the buzzer sounds for 5 s. OFF: silent.



12 Power saving mode

OFF by default. ON: in battery mode with a load below 25 W the output periodically switches off; above 35 W it runs continuously.

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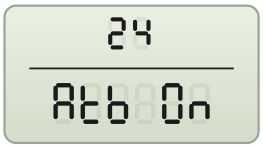
13 **Switch to bypass on overload**

OFF by default. ON: in PBG and MKS modes on overload the inverter immediately switches the loads to grid (bypass).



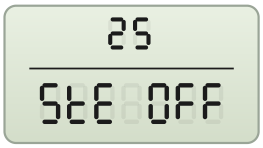
14 **Silent mode**

OFF by default. ON: the buzzer stays silent on any warnings and faults. Button sounds remain.



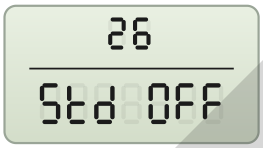
24 **Backlight auto-off**

ON by default: the backlight goes off after 1 min without presses.



25 **Soft start**

OFF by default. ON: output voltage ramps up smoothly from 0. Can be set only for a single inverter.



26 **Reset to factory settings**

Set ON: all settings return to factory defaults, then the item shows OFF again. Works on grid and in standby; not in battery mode.

DISPLAY CODES

Faults and warnings

Faults: the red FAULT indicator is lit

The inverter enters fault mode: the red indicator is lit and the display shows a fault code. The buzzer sounds for 10 seconds. The inverter tries to restart by itself; if it does not work after six attempts, it stays in fault mode: switch it off completely (until the display goes dark) or wait 30 minutes.

Code	Meaning	When it occurs	When it clears
1	**Bus boost failure**	During grid soft start the bus voltage does not reach the set value	15 s after the set voltage is reached
2	**Bus overvoltage**	Bus voltage above the set value	15 s after the set voltage is reached
3	**Bus low voltage**	Bus voltage below the set value	does not recover
4	**Battery overcurrent**	Battery current above the set value	does not recover
5	**System overheating**	PFC temperature above the set value or fan not connected	15 min after cooling and connecting the fan
6	**Battery overvoltage**	Battery voltage above the set value	15 s after the set voltage is reached
7	**Bus soft-start failure**	During start from battery the bus voltage did not reach the set value	15 s after the set voltage is reached
8	**Bus short circuit**	Bus voltage below the set value	does not recover
9	**Inverter soft-start failure**	During start the output voltage did not reach the set value	15 s after the set voltage is reached
11	**Low inverter voltage**	In battery mode the output voltage is below the set value	15 s after the set voltage is reached

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12	**Output short circuit**	Output voltage below and current above the set values	after 15 s
13	**Inverter reverse power**	Inverter power is negative and exceeds the set value for some time	after 15 s
14	**Overload**	Load current above the set value (see also item 61)	after 15 s
17	**Firmware update**	The inverter firmware is updating (including over the internet)	after the update
18	**PV polarity reversed**	Solar panels connected with reversed polarity	15 s after correct connection
26	**BMS fault**	The BMS message contains an error code	after the BMS fault is cleared
29	**Abnormal load**	An abnormal load causes abnormal output voltage	15 s after voltage is back to normal

Warnings: the red FAULT indicator flashes

The inverter does not enter fault mode: the red indicator flashes, the display shows **ALA** and a code (e.g. ALA 52). The buzzer sounds every second for 1 minute.

Code	Meaning	When it occurs	When it clears
50	**Battery disconnected**	Battery disconnected (up to 10 min)	after battery connection and 2 min of charging
51	**Battery discharged to shutdown**	Battery voltage below item 19: shutdown or cannot switch on	when voltage is above item 19 by 2 V
52	**Low battery voltage**	Battery voltage below item 18	when voltage is above item 18 by 2 V
53	**Short circuit while charging**	Battery voltage below 12 V with charge current present; not charging	up to 1 min after the short is cleared
56	**No BMS link**	BMS link lost (item 44 enabled)	after the link is restored or the function is off
58	**Fan fault**	No fan speed signal; fan runs at full speed	when the signal returns
59	**EEPROM memory error**	Memory read or write error	does not recover
60	**Overload**	Grid current, battery discharge current or load power above rated	when values are below rated
62	**Weak sun, no battery**	Battery not connected, bus voltage below the set value: solar output to the load switches off, battery charging continues	after battery or grid is connected, or after 10 min
68	**Low-SOC cut-off**	BMS reports SOC below item 46; the inverter goes to standby	SOC 5 % above the setting or item 46 or 44 off
69	**Low SOC**	SOC below setting +5 % (grid or battery) or +10 % (standby)	SOC 10 % above the setting or item 46 or 44 off
72	**Battery cannot start the inverter**	In standby the battery voltage is below the start threshold	when voltage is above the threshold
77	**Unstable grid**	Grid lost 3 times in 5 minutes	after 5 min

TROUBLESHOOTING · WI-FI

What to check if something is wrong

Per section 8 “Trouble Shooting” of the manufacturer’s manual

On the display	Possible cause	What to do
Fault 5 overheating	PFC temperature above threshold for more than 20 s, or warning 58 lasts 5 s	Check that the fan is connected and its wires are not loose. If the fan is disconnected for more than 5 min, fault 5 appears.

Fault 12 output short circuit	In battery mode or standby the inverter voltage is below 80 V and current above 30 A	Check for a short on the output terminals (e.g. a screw pierced a terminal and shorted L and N). Check inverter voltage and current.
Warning 58 fan	Any fan makes fewer than 8 turns in 2 s	Check the fan connection and wires. If connected correctly, the fan control circuit or the fan itself may be faulty.
Won't start battery	Starting from battery needs ≥ 11.5 V per cell; cause: wrong calibration or insufficient battery voltage	Measure the voltage at the battery terminals with a tester. Battery voltage must match the model (24 V): wrong voltage can damage the capacitors.
Will not turn on grid	Short on the grid terminals or wiring error	Check for a short between L and N on the terminals and that the grid is not connected to the output terminals.
Won't start PV	PV voltage near the threshold	Check PV voltage.
No PV charging	Battery of wrong voltage connected	Wrong battery voltage can damage the auxiliary supply on the PV side: check that the battery matches the model (24 V).

Wi-Fi monitoring

Per the manufacturer's manual the Wi-Fi module (stick) plugs directly into the **COM** port on the bottom panel; some models have built-in Wi-Fi (per the manufacturer's datasheet, built-in). When the inverter is connected to Wi Fi, the Wi-Fi icon is lit on the display.

The manufacturer describes network and app setup in a separate short app guide ("solar APP quick configuration guide"). The inverter manual gives no app name or steps, so they are not given here: use the leaflet supplied with the inverter or Wi-Fi module.

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