USER MANUAL · ENGLISH

Inverter POWLAND ISolar-SMS-5KW-24V-WiFi

Hybrid solar inverter 5 kW / 24 V with Wi-Fi: description, connection, settings menu, LiFePO4 setup



This manual was prepared by the seller from the printed manual supplied with this inverter. Program numbers and codes are as on its screen. The manufacturer's full manual is a separate file on the product page. Before installation check the label on the case: label values take priority.

1. What this device is

Hybrid (off-grid) inverter 5 kW for a 24 V system: pure sine wave inverter, MPPT solar charge controller and grid charger in one case. Solar and grid can feed the loads together; can run without a battery, on solar.

- Grid / generator input 230 V
- Solar panel input (PV)
- Battery 24 V (LiFePO4 25.6 V or 2×12 V)
- Output OUT1 (and OUT2 on dual-output models)
- BMS port (RJ45, RS485/CAN), COM port, Wi-Fi monitoring
- Solar surplus can be exported to the grid (item 36)

2. Technical specifications

Model	**SMS-5kW 24V WiFi**
Rated power	**5000 VA / 5000 W;** peak 10 kVA
Battery voltage	**24 V DC,** lithium and lead-acid
Output	208 / 220 / 230 / 240 V AC, 50/60 Hz, pure sine; transfer 10 ms (20 ms with generator)
Overload on battery	1 min at 102–120 %, 10 s above 120 %
Grid input	90–280 V AC (APP / GEn), 170–264 V AC (UPS)
Solar panels (PV)	up to 9000 W, up to 27 A; Voc up to 500 V; MPPT 60–450 V; start from 80 V
Charging current	up to 160 A from solar, up to 160 A from grid, up to 160 A total
Efficiency from battery	up to 93.5 %
Comms	RS485 / CAN (BMS), RS232, Wi-Fi

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3. Contents, panel and connectors

In the box

- Inverter
- Data sheet and manufacturer’s manual (English)
- 10 E6010 ferrules (AC input, AC output, PV)
- Ring lug for earthing

Panel

- Indicators: AC (grid), INV (inverter), CHG (charge), FAULT
- Buttons: ESC, UP, DOWN, ENTER

Bottom

- ON/OFF switch
- AC IN, OUT1, OUT2 (not on all models)
- PV, BAT− / BAT+
- BMS port (RJ45) and COM port

Side

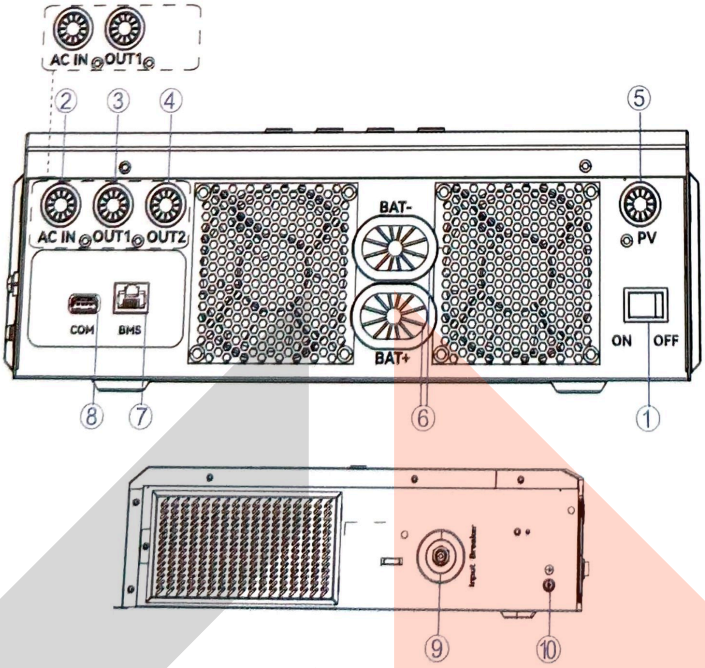
- Grid input breaker, PE earth terminal

Where to install

- Vertically on a non-combustible wall, in a dry room, away from sun and moisture
- At least 50 cm free above and below, 30 cm at the sides; as close to the battery as possible

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Inverter connectors: bottom panel and side wall



№	Connector	What it is	What connects where
1	**ON / OFF**	Inverter power switch	Switch on after connecting the battery and its DC breaker
2	**AC IN**	Grid / generator cable entry to the AC IN terminals (L, N, PE)	Via a 32 A breaker; do not confuse with the outputs
3	**OUT1**	Entry for the output 1 cable (terminals L, N, PE)	Via a 32 A breaker to the load panel
4	**OUT2**	Entry for the output 2 cable, not on all models	Second load; the cable and breaker are not specified separately in the manual
5	**PV**	Solar panel cable entry to the PV+ / PV– terminals	Via a PV DC breaker; Voc up to 500 V, MPPT 60–450 V, start from 80 V, current up to 27 A
6	**BAT– / BAT+**	Entries for the 24 V battery power cables (top: BAT–, bottom: BAT+)	50 mm² cable with lugs via a 250 A DC breaker: red to BAT+, black to BAT–
7	**BMS**	RJ45 port for communication with the lithium battery BMS (RS485 / CAN)	Battery communication cable; program 17 = FEL, program 44 = battery protocol; the pinout is not given in the manual
8	**COM**	Communication port (USB connector) for the Wi-Fi module	Wi-Fi module for monitoring
9	**Input Breaker**	AC grid input breaker (on the side wall)	Built-in grid input breaker; the rating is not given in the manual
10	**PE**	Protective earth terminal (on the side wall)	Earth cable with an OT ring lug (included)

Top left, in a frame: the single-output version (AC IN and OUT1 only).

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4. Wiring sequence

1. All breakers off, inverter switch OFF.
2. **Battery.** 50 mm² cables with lugs, via a 250 A DC breaker: red “+” to “BAT+”, black “−” to “BAT−”. Reversed polarity damages the inverter.
3. **BMS comms cable** (if any): into the BMS port (RJ45); in the menu item 17 = FEL and item 44 = battery protocol (section 6).
4. **Loads:** to OUT1 terminals (L, N, PE) via a 32 A breaker.
5. **Grid:** to AC IN terminals (L, N, PE) via a 32 A breaker. Do not mix up AC IN and the outputs.
6. **Solar panels:** to PV+ / PV− via the PV DC breaker. String Voc allowing for frost: up to 500 V, operating voltage 60–450 V, current up to 27 A.
7. **Earthing** of the case is mandatory.
8. Switch on the battery and DC breaker, then the inverter ON switch, set up the menu (section 6), then grid, PV and loads.

Safety. Make all connections with the battery, grid and PV switched off. Battery short-circuit current is very high. Installation is best left to an electrician.

5. How to enter settings

1. Hold **ENTER** 2 seconds: the program number appears.
2. **UP / DOWN:** choose the program, **ENTER:** the value flashes.
3. **UP / DOWN:** change, **ENTER:** save, **ESC:** exit.

The letter T on the screen looks like “├” (such codes are marked * in the table).

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6. Settings for LiFePO4 25.6 V with BMS

№	Program	What to set
01 / 02	Output	230 V, 50 Hz
03	Output priority	PbG: maximum solar and battery; GPb: if backup matters most (factory)
04	Input mode	APP; UPS for computers; GEn with a generator
05	Charging priority	PnG (solar + grid) or OPu (solar only)
06	Grid charging current	20–40 A (factory 80 A), no more than the battery allows
07	Max. charge current	per battery data sheet (factory 120 A)
17	Battery type	**FEL:** LiFePO4 (factory AGn)
44 / 45	BMS communication	battery protocol: PYL (Pylontech), GRO, VOL, IRO, CVT or PAR; set the same with the DIP switch on the battery. Address: AtO. Without BMS cable: OFF
20 / 21	Charge / float voltage	28.4 V / 27.2 V (factory for FEL 27.6 / 27.2 V)
18 / 19	Low-voltage warning / cut-off	24.0 V / 23.2 V (factory FEL shutdown 21 V is too low for LiFePO4 8S)
15 / 16	To grid / back to battery	24.8 V / 26.2 V (factory for FEL)
46–48	By SOC (BMS link only)	shutdown at 20 %, to battery at 90 %, to grid at 50 % (factory)
61	Max. discharge current	per battery data sheet (factory 190 A)
32 / 35	Equalization charge	OFF: not used for LiFePO4

The exact charge current for your battery is in the “Connection: inverter + battery” guide on the product page.

7. All menu programs

№	Code	Parameter	Factory	Options
01	OPU	**Output voltage**	230 V	208 / 220 / 230 / 240 V
02	OPF	**Output frequency**	50 Hz	50 / 60 Hz
03	OPP	**Output priority**	GPb	GPb: grid first; PGb: solar first; PbG: solar → battery → grid; ntS (MKS): generator first
04	nOd	**Input mode**	APP	APP: household appliances (10 ms); UPS: computers (10 ms); GEn: generator on AC IN (20 ms)
05	CHP	**Charging priority**	PnG	PnG: solar and grid together; OPu: solar only; PuF: solar first, grid only without sun
06	TCC*	**Grid charging current**	80 A	2 / 10 / 20 ... 160 A
07	nCC	**Max. charge current (solar + grid)**	120 A	2 / 10 / 20 ... 160 A
08	ndF	**Return to the first screen after 1 min**	ON	ON / OFF
09	LTS*	**Auto restart after overload**	ON	ON / OFF

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№	Code	Parameter	Factory	Options
10	TTS*	**Auto restart after overheating**	ON	ON / OFF
11	nIP	**Alarm on grid or PV loss**	ON	ON / OFF
12	PuS	**Power saving (up to 25 W the output switches off periodically)**	OFF	ON / OFF
13	OLG	**Overload → switch to grid (PbG, MKS)**	OFF	ON / OFF
14	nUt	**Silent mode**	OFF	ON / OFF
15	btG	**Battery voltage to switch to grid**	FEL 24.8 V	AGM/FLD 22–26 V; LIb/FEL/CUS 20–25 V
16	btb	**Return-to-battery voltage**	FEL 26.2 V	AGM/FLD 24–29 V; LIb/FEL/CUS 23–29 V
17	bAt	**Battery type**	AGn	AGn: AGM; FLd: flooded; LIb: lithium NMC; FEL: LiFePO4; CUS: own values
18	bAL	**Low-voltage warning**	FEL 24 V	LIb/FEL/CUS 20.6–25 V
19	bAU	**Low-voltage cut-off**	FEL 21 V	LIb/FEL/CUS 20–24 V
20	bCu	**Charge voltage (CV)**	FEL 27.6 V	LIb/FEL/CUS 24–30 V; must be above float
21	bFL	**Float voltage**	FEL 27.2 V	LIb/FEL 25–29 V; CUS 24–30 V
22	LLu	**Grid voltage lower limit**	154 V	APP/GEn 90–154 V; UPS 170–200 V
23	LHu	**Grid voltage upper limit**	264 V	APP/GEn 264–280 V; UPS 264 V
24	Atb	**Backlight off after 1 min**	ON	ON / OFF
25	STE*	**Output soft start**	OFF	ON / OFF
26	Std	**Reset to factory settings**	OFF	ON: reset (on grid or standby, not on battery)
29	SbA	**Battery disconnect signal**	OFF	ON / OFF
31	E9u	**Equalization charge voltage**	FEL 28 V	24–30 V
32	E9t	**Equalization charge time**	OFF	5–900 min
33	E9O	**Equalization charge delay**	120 min	OFF or 5–900 min
34	E9I	**Equalization charge interval**	30 days	1–90 days
35	E9n	**Equalising charge now**	OFF	ON / OFF
36	GTI*	**Export surplus to the grid**	OFF	OFF / INT
37	GtP	**Max. grid feed-in power**	5.0 kW	0–5.0 kW, step 0.5
38	dbu	**Second output: shutdown by battery voltage**	24 V	22–30 V
39	dbt	**Second output: run time on battery**	OFF	5–900 min; FUL: no limit
40	dbS	**Second output: shutdown by SOC**	20 %	5–90 % or OFF

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№	Code	Parameter	Factory	Options
44	bnS	**BMS comms protocol**	OFF	PYL (485/CAN), GRO (485/CAN), VOL, IRO, CVT, PAR (485)
45	bnI	**BMS address**	AtO	AtO: automatic; 0–15
46	bSU	**Low-SOC cut-off**	20 %	5–50 % or OFF
47	Stb	**SOC to return to battery (PbG)**	90 %	10–100 % or OFF
48	StG	**SOC to switch to grid (PbG)**	50 %	10–90 % or OFF
61	ndC	**Max. battery discharge current**	190 A	10–190 A or OFF

Voltages given for FEL (LiFePO4); for other types see the manufacturer's manual. Programs 27, 28, 30, 41–43, 49–60 are not in the printed manual. *: the letter T on the screen looks like "┣".

8. Codes and faults

Code	Meaning	What to do
ALA 56	No BMS link	Check the cable in the BMS port, the protocol in program 44 and the DIP switch on the battery
ALA 60	Discharge current exceeded (program 61)	Reduce the load; if it lasts 5 s: fault 14, the output switches off
ALA 68 / 69	Low battery SOC (program 46)	Charge the battery; clears when SOC is 5–10 % above the threshold
—	**Will not turn on**	Check the DC breaker, polarity and whether the battery is on (the BMS may have tripped)
—	**Overload**	Load above 5000 W or high inrush current: switch some loads off
—	**No solar charging**	PV string voltage outside 60–450 V, PV breaker off or reversed polarity
—	**Does not switch to grid**	Grid voltage outside programs 22–23 limits; for a generator choose GEn in program 04

The printed manual has no full error code table. If the screen shows another code and the fault persists, contact the seller.

Maintenance. Every 3 months check terminal tightness and that the vents are clean. Do not open the inverter: dangerous voltage remains inside even when switched off.

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