USER MANUAL · ENGLISH

Inverter EASUN SMT-2KW 12V

Hybrid solar inverter 1.6 kW / 12 V, model ISolar-SMT-2K-WiFi: description, mounting, wiring, modes, LiFePO4 settings, faults



This manual was prepared by the seller from the manufacturer's manual. Before installing, compare the label on the inverter case with this manual: values on the label and in the manufacturer's manual take precedence.

1. What this device is

Hybrid (off-grid) inverter for a 12 V system: 1600 W pure sine wave inverter, MPPT solar controller up to 2000 W and mains charger in one case. Works as a UPS for a home, cottage or office and as a small solar plant.

- Grid / generator input 230 V (AC IN) with input breaker
- Solar panel input (PV), MPPT 30–500 V
- 12 V battery: LiFePO4 12.8 V or lead-acid (AGM, flooded)
- 230 V output to loads (AC OUT)
- BMS/RS485, RS232 ports, dry contact, Wi-Fi

Important: this model switches on only with a battery connected.

2. Technical specifications

Model	**ISolar-SMT-2K-WiFi**
Rated power	**1600 W** (2 kVA), peak 3200 VA
Battery voltage	**12 V DC** (LiFePO4 12.8 V 4S or lead-acid 12 V); recommended capacity from 200 Ah (per the manufacturer's table); CV charge 14.1 V, float 13.5 V (factory)
Output	220 / 230 / 240 V AC ±5 %, 50 / 60 Hz, pure sine wave; switchover 10 ms (UPS) / 20 ms (APL); battery efficiency over 94 %
Grid / generator input	L + N + PE, 220–240 V AC; APL — 90–280 V, UPS — 170–280 V; 50 / 60 Hz
Solar panels (PV)	MPPT 30–500 V, best 300–400 V; **Voc no more than 500 V;** max. PV power **2000 W**
Charging current	solar up to 100 A; grid up to 60 A; total up to 100 A (programs 02 and 11)
Running without battery	yes, on solar (battery-free mode); **switches on only with a battery connected**
Parallel operation	no
Operating temperature	−10...+50 °C, humidity 20–95 % non-condensing; noise up to 50 dB
Comms	RS232; BMS/RS485 port (RJ45: 1: RS485-B, 2: RS485-A); dry contact 3 A / 250 V AC; Wi-Fi board (Solar of Things app)

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Battery cable / protection	2×25 mm², M8 ring lugs; 150 A fuse (typical current 165 A)
AC / PV breakers and cables	AC: 25 A breaker, 2.5 mm² cable; PV: separate DC breaker, 4 mm² cable

Inverter rating plate



Label on the case: model ISolar-SMT-2K-WiFi, 2000 VA / 1600 W, battery 12 V DC 150 A, grid charging 60 A, solar up to 100 A, panels up to 2000 W, PV voltage 30–500 V (best 300–400 V), IP21 protection, operating temperature −10…+50 °C.

3. Contents and location

In the box

- Inverter
- Manufacturer’s manual

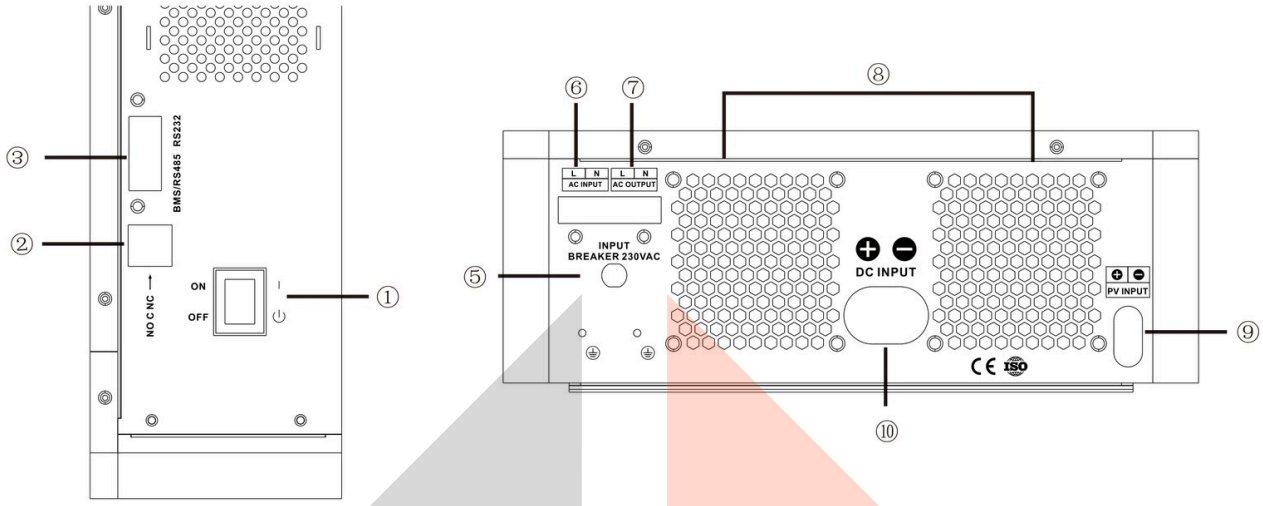
Prepare cables, battery fuse or breaker, AC and PV breakers and M6×80 expansion bolts separately.

Where to install

- Vertically on a concrete or other non-combustible wall, at eye level
- 20 cm clearance at the sides, 50 cm above and below
- Best 20–35 °C, dry, out of direct sun
- Two M6×80 mm expansion bolts
- Close to the battery (short battery cables)

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Inverter connectors: side wall and bottom panel



№	Connector	What it is	What connects where
1	**ON / OFF**	Inverter power switch	The inverter switches on only with the battery connected
2	**Dry contact**	Dry contact NO / C / NC, 3 A / 250 V AC	Signal to an external device when the battery voltage reaches the warning level
3	**BMS/RS485 and RS232**	Communication ports: BMS/RS485 (RJ45) and RS232	BMS/RS485 — battery communication cable: 1 — RS485-B, 2 — RS485-A, 3–8 not used; program 05 = protocol, 37 = ON. RS232 — 2400 baud
5	**INPUT BREAKER**	AC input breaker 230 V	Built-in grid input protection; if it trips, check the AC wiring
6	**AC INPUT**	Grid / generator input terminals (L, N)	2.5 mm² cable via a 25 A breaker, torque 0.8–1.0 N·m; PE first
7	**AC OUTPUT**	230 V output terminals (L, N)	2.5 mm² cable, torque 0.8–1.0 N·m; do not confuse with the input
8	**Fan**	Ventilation grilles, not a connector	Do not cover
9	**PV INPUT**	Solar panel cable entry to the PV+ / PV– terminals	4 mm² cable via a separate DC breaker, torque 1.4–1.6 N·m; Voc up to 500 V, MPPT 30– 500 V
10	**DC INPUT**	Entry for the 12 V battery cables (“+” and “–”)	2×25 mm² cable with M8 ring lugs; 150 A fuse in the “+”; torque 5 N·m

Item ④ of the manual (RS232 port) is located in the same frame as ③; the earthing symbols under breaker ⑤ are not numbered in the list.

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4. Wiring sequence

1. All breakers off, inverter switch OFF. Remove the bottom cover (two screws).
2. **Battery.** 2×25 mm² cable with ring lugs, via a 150 A fuse or DC breaker in the "+". Red "+" to "+", black "–" to "–"; reversed polarity damages the inverter. Tighten the bolts securely (manufacturer's table: 5 N·m).
3. **Grid and load.** Strip 10 mm, shorten L and N by 3 mm. First PE (yellow-green), then L (brown or black) and N (blue). Input to the "IN" terminals via a 25 A breaker, load to the "OUT" terminals; do not mix up IN and OUT. 2.5 mm² cable, torque 0.8–1.0 N·m.
4. Solar panels via a separate DC breaker to PV+ / PV–, 4 mm² cable, ferrules on the ends, torque 1.4–1.6 N·m. Check polarity with a multimeter. String Voc including frost: up to 500 V; operating voltage preferably 300–400 V.
5. **BMS link** (if the battery has RS485): cable into the BMS/RS485 port: 1: RS485-B, 2: RS485-A.
6. Refit the cover, switch on the battery, then the inverter switch, set up the menu (section 6), then grid, PV and load.

Safety. Make connections with battery, grid and PV off; cover the panels in daylight. Battery short-circuit current is very high. Installation is best left to an electrician. Air conditioners and fridges need a 2–3 minute restart delay.

5. Output and charging priorities

Program 01	How it works
SUb	Sun first; if sun is not enough, the grid adds. The battery is kept full as backup.
SbU	Sun first, then battery; switches to grid when battery voltage drops to program 12 (or the low-voltage warning), back to battery per program 13. Maximum self-consumption.

Program 16	How the battery charges	Code	How the battery charges
SNU	Sun and grid together (factory)	CSO	Sun first, grid when there is no sun
CUt	Grid first	OSO	Sun only

In battery mode only the sun charges.

6. Settings for LiFePO4 12.8 V

Hold **ENTER** for 3 seconds to enter the menu; **UP / DOWN:** select, **ENTER:** confirm, **ESC:** exit. Set the battery type (05) first: voltages 24, 26, 27, 29 can be set only for type USE.

№	Program	What to set
05	Battery type	**USE:** LiFePO4 without comms cable (factory AGn = AGM). If the battery has an RS485 port and comms cable, use its protocol: PYL (Pylontech), GrO, FEL, LIA, LIb, tqF or LIC
37	BMS communication	OFF without comms cable; ON with a cable in the BMS/RS485 port (then SOC programs 38–41 apply)
02	Max. charge current (solar + grid)	per battery datasheet; for 12.8 V 100Ah: **50 A** (factory 60 A, step 10 A)
11	Grid charging current	for 100Ah **20–50 A** (factory 30 A), no more than program 02

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№	Program	What to set
26	Charge voltage (CV)	**14.2 V** (factory 14.1 V, range 12.0–15.0 V)
27	Float voltage	**13.6 V** (factory 13.5 V)
24	Low-voltage warning	**12.5 V** (factory 10.0 V, range 10.0–13.5 V)
29	Low-voltage cut-off	**12.0 V** (factory 10.5 V, range 10.0–13.0 V); factory 10.5 V is too low for LiFePO4
12	Switch to grid (SbU)	**12.5 V** (factory 11.5 V, range 11–12.5 V)
13	Back to battery (SbU)	**13.5 V** or FUL: after full charge (range 12–14.5 V)
30	Equalization charge	EdS: off (not used for LiFePO4)
03	Input range	APL: household appliances and generator; UPS: computers
09 / 10	Output frequency / voltage	50 Hz, 230 V

7. Wi-Fi monitoring

Install the “Solar of Things” app, register, tap “Wi-Fi Configuration”, select the collector via Bluetooth and connect it to your 2.4 GHz home Wi-Fi. Then add the device with the “+” button using the ID on the collector sticker. Step by step with pictures in the “Original manufacturer’s manual”.

Display codes

Red LED steady: fault (code with ERROR icon); flashing: warning (code with ⚠ icon).

Code	Meaning	What to do
01	Fan fault	Check the fan; if it recurs, go to a service centre
02, 05	Overheating / output short circuit	Free airflow (20 cm at the sides, 50 cm above and below), check output wiring
03	High battery voltage	Check battery type (05) and charge voltage (26)
04	Low battery voltage	Charge the battery
07	Overload	Reduce the load (to 1600 W); with too high PV voltage power is derated: use fewer panels per string
59	PV voltage above the limit	Use fewer panels in series (Voc up to 500 V)
bP	Battery not connected	Check the battery fuse and terminals
15	Low PV energy	Normal in the evening or cloudy weather
61	Lost link with BMS	Check the cable in the BMS/RS485 port, protocol in item 05 and item 37
69 / 71	BMS blocks charge / discharge	Check the battery status in its app

Full code table: see the “Original manufacturer’s manual” on the product page.

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8. Troubleshooting

What you see	Cause	What to do
Turns on and goes off after 3 s	Battery voltage too low	Charge the battery, check fuse and terminals
No response	Battery deeply discharged or internal fuse blown	Charge the battery; if that fails, contact service
Grid is on, but runs from battery	Input breaker tripped, poor grid or generator quality, SbU priority	Check the breaker and AC wiring; for a generator set item 03 = APL, check item 01
Relay clicks, display flashes	Battery disconnected	Check battery cables
No solar charging	PV voltage out of range, PV breaker off, item 16 = CUt	Check string voltage and polarity, item 16

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