SETUP MANUAL · ENGLISH

ECGSOLAX 1 kW 12 V hybrid inverter

Wiring, connectors, all display menu items (00–36), fault and warning codes



Display and INV/AC, CHG, FAULT LEDs. Four buttons below them.

Control panel

On the front panel: display, three LEDs and four buttons.

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

How to change settings

1. Press and hold **ENTER** for 3 seconds: the menu opens.
2. Use **UP / DOWN** to choose the item number.
3. Press **ENTER,** choose the value with **UP / DOWN, ENTER:** save.
4. **ESC:** exit the menu.



Most important: battery type is item 05.

The menu only has AGn (AGM, default), FLd (flooded) and USE (user-defined, voltages in items 26, 27, 29). This model has no lithium type and no BMS link.

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

What is in the kit

Inverter: 1 pc, manual: 1 pc, U-shaped lugs: 2 pcs. Check nothing was damaged in transit.

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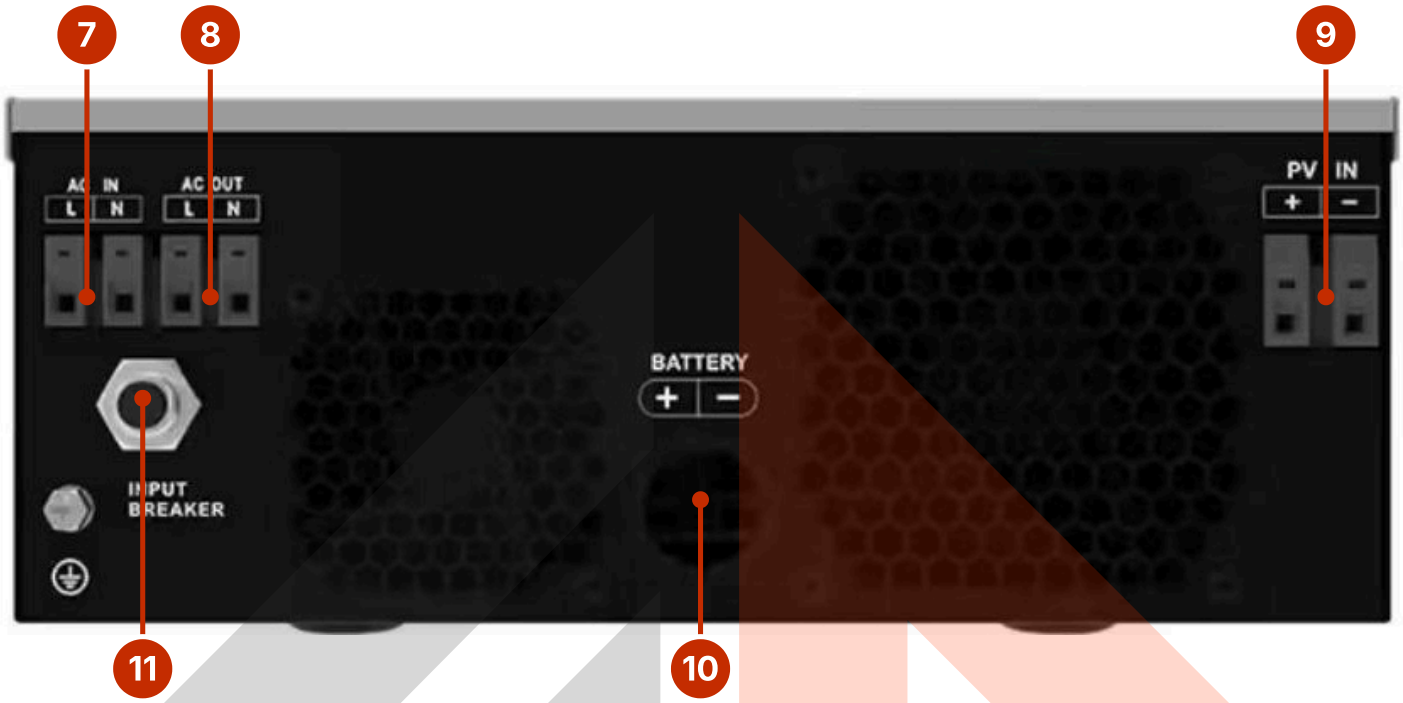
CONNECTORS

Bottom and side panels: what goes where





Top: the bottom panel (platform image from the manufacturer's archive); left: real photo of the side panel. Numbers 6–12 as in the parts list of the original manual (1–5: display, LEDs and buttons on the front panel). The ⏚ sign next to the breaker on the bottom panel is the earthing point.

№	What it is	Why	What to connect
6	**Switch**	Switches the inverter on and off (on the side panel, ⏻ symbol).	—
7	**AC IN**	Grid or generator input terminals **L · N**.	cable from the grid via a separate 20 A breaker
8	**AC OUT**	Load output terminals **L · N**. Do not confuse with AC IN.	cable to the load panel
9	**PV IN**	+ · – terminals of the solar panels.	cables from the panels via a separate DC breaker
10	**BATTERY**	Entry for the 12 V battery cables (+ · –).	battery cables via DC protection / isolator
11	**Breaker (INPUT BREAKER)**	Input breaker. If the inverter "does not see" the grid, check that it has not tripped.	—
12	**AC OUT socket**	Output socket on the side panel (the same inverter output).	appliance plug

Remove the bottom cover (two screws) before wiring. Do not mix up the **IN** and **OUT** terminal blocks: the manual warns about this.

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TECHNICAL DATA

Specifications (1 kW 12 V model)

AC input (grid)		Output (battery mode)	
Waveform / rating	sine wave (grid or generator), **230 V**	Rated power	**1000 VA / 1000 W**
Low limit / return	UPS **170 ± 10 V / 180 ± 10 V;** APL **90 ± 10 V / 100 ± 10 V**	Voltage / frequency	**230 V ± 5 %, 50 Hz,** pure sine wave
High limit / return	**280 ± 10 V / 270 ± 10 V**	Peak efficiency	**94 %**
Max. input voltage	**300 V**	Overload	3 s at ≥ 150 %; 5 s at 100–150 %
Frequency	**50 / 60 Hz** (auto-detect); limits 40–65 Hz (return 42 / 63 Hz)	Surge capacity	2 × rating for 5 s
Transfer time	**10 ms**	No-load consumption	**< 28 W**
Grid efficiency	**> 95 %**	**Battery 12 V**	
Output SC protection	breaker	Cold start	**11.5 V**
Power derating	below 170 V input (to 50 % at 90 V)	Warning (load < 50 % / ≥ 50 %)	**11.25 / 11.0 V,** return 11.75 / 11.5 V
Charge		Cut-off (load < 50 % / ≥ 50 %)	**10.75 / 10.5 V**
Algorithm / grid current	3 stages / **40 A**	High voltage: cut-off / return	**16.0 V / 15.5 V**
Bulk: flooded / AGM, gel	**14.6 V / 14.1 V**	**Solar panels (PV), MPPT**	
Float	**13.5 V**	Max. PV power	**600 W**
Max. charge (grid + sun)	**80 A**	MPPT range / max. Voc	**20–150 V / 150 V**
General		Max. PV charge current	**40 A**
Operating / storage temperature	**−10…50 °C** / −15…60 °C	Dimensions (D × W × H) / weight	**286 × 240 × 91 mm / 3 kg**
Humidity	5–95 %, non-condensing	Certification	CE

Data from tables 1–4 of the original manual (column 1.0KW-12V). Compare with the label on your inverter.

Safety (from the manual)

- Before use, read all instructions and warning labels on the inverter, battery and in the manual.
- The manual requires charging only deep-cycle lead-acid batteries: other types may be damaged.
- Do not open the inverter. Disconnect all cables before servicing: switching off does not remove the shock risk.

- Installation with a battery by a qualified person only. Never charge a frozen battery. Take care with metal tools near the battery.
- The inverter must be permanently earthed. Avoid short circuits on the AC output and DC input.
- Air conditioners need 2–3 min to restart: check whether yours has a start delay.

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WIRING

Mounting, cables and step-by-step wiring

Location

- Only on concrete or another **non-combustible** solid surface, vertically on a wall, at eye level.
- Clearances: **20 cm** at the sides, **50 cm** above and below. Ambient temperature 0–55 °C.
- Fixing: two **M4 or M5** screws.

Cables and protection (manual tables for 1.0KW 12V)

Section	Cable	Protection	Torque
Battery	1 × 16 mm²	separate DC protection / isolator (rating not given in manual)	up to 5 N·m (inverter terminals: 2 N·m)
AC input / output	2.5 mm²	separate **20 A** breaker between grid and inverter	2 N·m
Solar panels (PV)	1 × 4 mm²	separate DC breaker (rating not given in manual)	up to 2 N·m

Step 1 Battery (BATTERY, No. 10)

- Strip 18 mm of insulation on “plus” and “minus”, crimp the lugs.
- Manual diagram for 1 kW 12 V: two 12 V batteries connected **in parallel,** fuse in the “plus” line.
- Insert the cables straight into the inverter’s battery terminals and tighten clockwise to **2 N·m** (Pozi No. 2 screwdriver). **Plus to plus, minus to minus:** check before the last connection or before switching on the DC breaker.

Step 2 Grid and load (AC IN No. 7, AC OUT No. 8)

- First switch off the battery DC protection / isolator.
- Strip 10 mm of insulation on six conductors; shorten L and N by 3 mm.
- Input: first **PE** (yellow-green), then **L** (brown or black) and **N** (blue). De-energise the grid first.
- Output: **L** and **N** into the AC OUT terminals. Tighten the screws and check the wires hold.

Step 3 Solar panels (PV IN, No. 9)

- Open-circuit voltage (Voc) of the panel string: no more than **150 V** and above the battery’s minimum voltage. MPPT range is **20–150 V,** max. PV power **600 W.**
- Strip 10 mm, crimp the lugs, check polarity and connect + to +, – to – (4 mm flat screwdriver).

The manual’s example (250 W panels, Voc 37.7 V: 2, 3 or 4 in series) partly exceeds these limits: 4 × 37.7 V = 150.8 V, and 750–1000 W is more than 600 W. Go by the 150 V and 600 W limits.

Step 4 Close up and switch on

- Refit the bottom cover and tighten the screws.
- When everything is connected, switch on the inverter with the side panel switch (No. 6).

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SETTINGS MENU

All display menu items

The display image shows default values for the 1 kW 12 V model. Items 04, 08, 15, 17, 21, 24, 28, 32 are not in the menu.

Output and operating modes



00 Exit menu / reset

GOE: exit the menu (default). **GOH:** one-button restore of settings (reset).



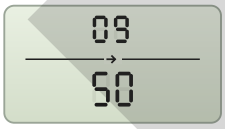
01 Load supply source priority

- **USb:** grid first (default). Sun and battery supply the load only when there is no grid.
- **SUb:** sun first. If sun is not enough, the grid adds at the same time. The battery supplies the load only when there is neither sun nor grid, or sun is insufficient and there is no grid.
- **SbU:** sun, then battery. If sun is not enough, the battery adds at the same time. The grid supplies the load only when battery voltage drops to the warning level or to the item 12 value.
- **MKS** (ntS on display): with sun, the load runs on sun and battery, grid is backup. Without sun, the grid supplies and the battery is backup.



03 Grid input voltage range

- **APL:** household appliances (default): 90–280 V.
- **UPS:** 170–280 V.



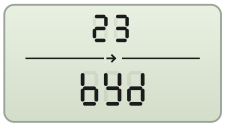
09 Output frequency

50 Hz default or 60 Hz.



10 Output voltage

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



23 Bypass on overload

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



06 Auto restart after overload

Ltd: off (default). **LtE:** on.



07 Auto restart after overheating

ttd: off (default). **ttE:** on.

Charge and discharge current



02 Maximum total charge current (sun + grid)

40 A default. Options: 10, 20, 30, 40, 50, 60, 70, 80 A.

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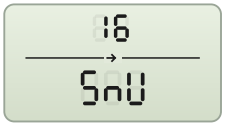
11 Maximum grid charging current

20 A default. Options: 2, 10, 20, 30, 40 A. If item 02 is lower than item 11, grid charging uses the item 02 current.



14 Maximum battery discharge current in SbU mode

20 A default. Options: 10, 20, 30, 40 A. Applies when SbU is selected in item 01.



16 Charging source priority

When the inverter is in grid, standby or fault mode:

- **CSO:** sun first; the grid charges only without sun.
- **SnU:** sun and grid charge together (default).
- **OSO:** sun only, even with grid present.

In battery or power-saving mode only the sun can charge, if there is enough.

Battery



05 Battery type

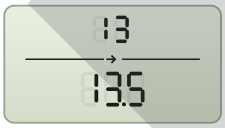
- **AGn:** AGM (default).
- **FLd:** flooded.
- **USE:** user-defined: voltages set in items 26, 27 and 29.

This model's menu has no other types (including lithium).



12 Battery voltage to switch to grid

11.5 V default, range 10.5–13.1 V, step 0.1 V. The manual describes this item for MKS mode in item 01 (the SbU description also refers to it).



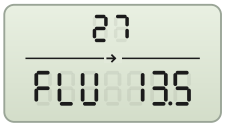
13 Battery voltage to return to battery

13.5 V default, range 12–14.6 V, step 0.1 V. **FUL:** only after full charge. In the manual: for MKS mode.



26 CV (bulk) charge voltage

14.1 V default. Can be changed only with type USE: 12–15 V, step 0.1 V.



27 Float voltage

13.5 V default. With type USE: 12–15 V, step 0.1 V.



29 Battery discharge cut-off (Low DC cut-off)

10.0 V default. With type USE: 10.0–12.0 V, step 0.1 V; then the threshold does not depend on load.

Equalising charge (FLd and USE only)



30 Equalization charge

EdS: off (default). **EEn:** on. Available if FLd or USE is selected in item 05.

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31 **Equalising voltage**

14.6 V default, 12–15 V, step 0.1 V.



33 **Equalising duration**

60 min default, 5–900 min, step 5 min.



34 **Equalising timeout**

120 min default, 5–900 min, step 5 min.



35 **Equalising interval**

30 days default, 0–90 days, step 1 day.



36 **Start equalising now**

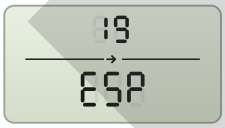
AdS: no (default). **AEn:** start immediately; **E9** appears on the main screen. Available if item 30 is on.

Display, sound, service



18 **Beeper**

bON: on (default). **bOF:** off.



19 **Return to main screen**

ESP (default): after 1 min without key presses the display returns to the main screen (input / output voltage). **tEP:** the last selected screen stays.



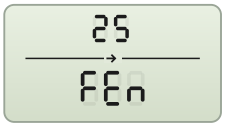
20 **Backlight**

LON: on (default). **LOF:** off.



22 **Alarm when the main source is lost**

AON: on (default). **AOF:** off.



25 **Fault code logging**

FEn: log (default). **FdS:** do not log.

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Battery settings, equalising, Wi-Fi

Li battery

This model's manual has **no** lithium battery type, BMS port or state-of-charge (SOC) settings. The manual's safety rules allow charging only deep-cycle lead-acid batteries. The only manual option is type **USE** (item 05), where CV (26), float (27) and cut-off (29) voltages are set within 12–15 V / 10–12 V. The manual gives no ready values for a lithium battery.

Equalising charge (lead-acid batteries)

Items 30–36 are available only for types **FLd** and **USE.** Enable item **30,** then set the interval in item **35** or start at once with item **36.** During equalising the display shows **E9.**

Wi-Fi and monitoring

This model's manual has no Wi-Fi / comms port or app, so there is no Wi-Fi setup section here.

Care: dust kit

If a dust kit is fitted: undo the screws, remove the side covers, take out and clean the foam filters, reassemble. The manual advises cleaning it once a month.

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DISPLAY CODES

Faults and warnings

Faults: red LED lit

A fault code is shown on the display.

Code	Meaning
01	Fan blocked while the inverter is off
02	Overheating
03	Battery voltage too high
04	Battery voltage too low
05	Output short circuit or internal converter overheating
06	Output voltage too high
07	Overload (time-out)
08	Bus voltage too high
09	Bus soft-start failure
51	Overcurrent or surge
52	Bus voltage too low
53	Inverter soft-start failure
55	DC component in AC output voltage
57	Current sensor faulty
58	Output voltage too low
59	PV voltage exceeds the limit

Warnings: red LED flashes

A code with the ⚠ sign flashes on the display.

Code	Meaning	Beeper
01	Fan blocked while the inverter is on	3 beeps every second
03	Battery overcharged	1 beep every second
04	Low battery voltage	1 beep every second
07	Overload	1 beep every 0.5 s
10	Output power derating	2 beeps every 3 s
15	Low solar energy	2 beeps every 3 s
E9	Equalising charge in progress	none

This model's manual has no "what to do" table for the codes. If a fault persists after a restart, contact the seller or a service centre (item 12 of the manual's safety rules).

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