Solar battery unit

51.2 V · 314 Ah · 16.07 kWh

MF-48314S / DT-48314S / GP-48314S

MFUZOP / DATOU BOSS



16.07 kWh energy reserve	**51.2 V** rated voltage
314 Ah capacity	**≥8000** cycles (70 % SOH, 25 °C)
≤ 15 units in parallel	**LiFePO4** lithium iron phosphate

Read this manual carefully before installation and use, and keep it for future reference.

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1 Safe use rules

Keep this manual for future reference. It describes how to install and operate the battery unit. Read all instructions and warnings carefully before installing or using it.

1.1 Safety warnings

DANGEROUS VOLTAGE

There is dangerous voltage inside the battery unit. Never disassemble it yourself. In case of a fault or need for service, contact a qualified specialist promptly.

1.2 Precautions during use

1. Do not immerse the product in water and protect it from moisture.
2. Do not charge the product near fire or in hot places; do not use or store it near heaters or other heat sources.
3. If you notice a leak or an unusual smell, move the product immediately to a safe open place.
4. Use the supplied charging cables; if replaced, the wire cross-section must be no smaller than the original.
5. Observe polarity during installation; do not connect the product in reverse.
6. Do not connect the product directly to household sockets or a car cigarette lighter.
7. Do not throw the product into fire or heat it.
8. Do not short-circuit the terminals with wire or other metal objects. Do not carry or store the product together with chains, hairpins or other metal items.
9. Do not pierce the product with nails or sharp objects, do not hit it or stand on it.
10. Protect the product from impacts, drops and other mechanical stress.
11. Do not solder or weld directly on the terminals.
12. Do not disassemble the product in any way.
13. Do not use the product together with other power sources (e.g. dry batteries) or with batteries of a different capacity, model or type.
14. If the product has been stored unused for more than 3 months, charge it.

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1.3 Abnormal situations

1. If you notice a leak or smell, move the product immediately to an open safe place. If electrolyte gets into the eyes, do not rub them: rinse with plenty of water and see a doctor immediately.
2. If the product is hot, deformed, discoloured or shows other signs of a fault, stop using it; if it is charging or discharging, disconnect it immediately.
3. If the product smokes or catches fire, ensure your own safety and quickly move it to a fireproof open place (e.g. onto sand or into a metal container).

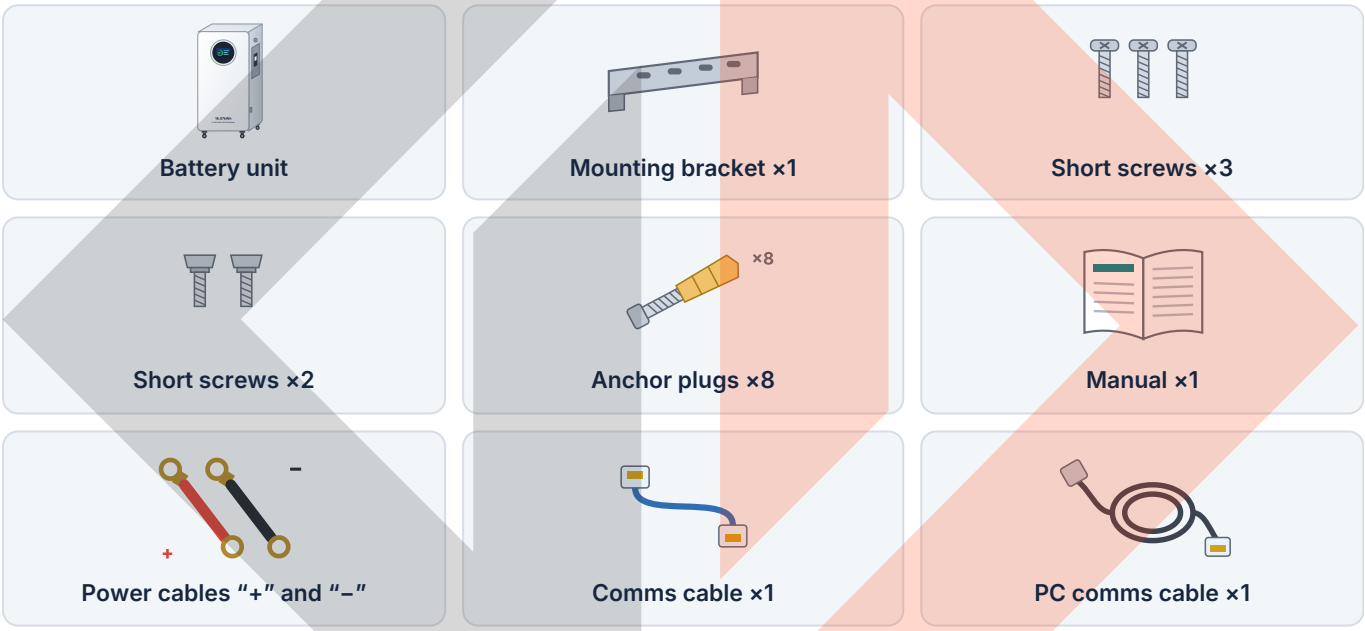
1.4 Environmental protection

Hand in used batteries for recycling according to local rules. Do not dispose of them with household waste.

2 Installation

2.1 Unpacking and inspection

Before installation, inspect the product and make sure the packaging is undamaged. The kit should include:



2.2 Preparation

Install the product while it is switched off. We recommend having it installed by a qualified electrician.

Wall mounting. When choosing the location, consider the following:

1. Do not install the product on flammable building materials.
2. Do not install the product in a corrosive environment.
3. Install the product on a solid base.
4. Install it so that the display is at eye level and always clearly visible.
5. For optimal operation the ambient temperature must be 0 to 55 °C.
6. Vertical installation against a wall is recommended.
7. Keep the clearances to other objects and surfaces shown in the diagram: they are needed for heat dissipation and easy cable disconnection.
8. Before connecting the cables, remove the bottom cover by undoing two screws.



Minimum clearances: 50 cm above and below, 20 cm at sides

CAUTION

Install the product only with the power off and cables disconnected.

2.3 Installation procedure

1. Check that all cables are connected as described in the manual.
2. Before use, make sure the operating conditions match the parameters given in this manual.

NOTE

Make sure the circuit breaker is in the **ON** position, then press the power button to switch the product on. The product is then ready for use.

CAUTION

- Install the product only with the power off and cables disconnected.
- All connection work must be carried out by qualified personnel.

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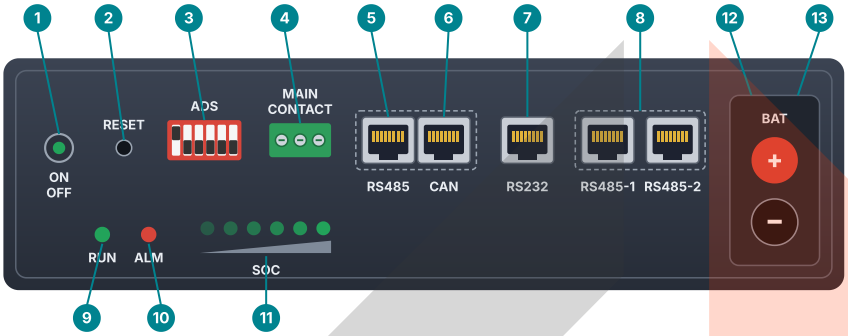
3 Technical specifications

Parameter	MF-48314S / DT-48314S	GP-48314S
Stored energy	16.07 kWh	
Internal resistance	≤13.9 mΩ	
Cell capacity	314 Ah	
Nominal operating voltage	51.2 V	
Standard charge current	210 A	150 A (max. 200 A)
Standard discharge current	157 A (max. 210 A)	200 A
Overvoltage protection (charge)	58.4 V	
Recovery after overcharge protection	54.0 V	
Deep discharge protection	43.2 V	
Recovery after discharge protection	46.4 V	
Overheat protection during charge	55 °C	60 °C
Recovery after overheat (charge)	50 °C	55 °C
Low-temperature protection during charge	0 °C	
Recovery after low temperature (charge)	5 °C	
Overheat protection during discharge	55 °C	60 °C
Recovery after overheat (discharge)	50 °C	55 °C
Low-temperature protection during discharge	−20 °C	
Recovery after low temperature (discharge)	−15 °C	
Overcurrent protection (charge)	215 A	
Overcurrent protection (discharge)	215 A	
Short-circuit protection	Yes; recovery: disconnect the load and connect a charger	
State of charge on shipment	40–60 %	
Cell balancing	Passive	
Consumption when off	≤300 µA	
Life	≥8000 cycles (70 % SOH, 25 °C) ≥3000 cycles (70 % SOH, 45 °C)	
Protection rating	IP20	
Comms protocols	RS232, RS485, CAN	
Dimensions (L × W × H)	453 × 260 × 879 mm	
Weight	113 kg	

Values are from the manufacturer's manuals for each model. Where values are the same, they are given once for both columns; rows where the models differ are highlighted.

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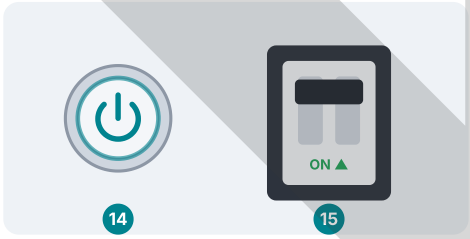
4 Functions and controls



Connector panel and terminals (under the top side cover)



Orange frame: location of the connector panel



Recess on the side of the unit

№	Device	Purpose
1	Switch indicator	Shows whether it is on or off
2	RESET button	Restart or switch off by pressing
3	Address DIP switch (ADS)	Address selection for parallel connection and comms
4	Dry contact (MAIN CONTACT)	Relay with normally open or normally closed contact
5	RS485	Inverter comms
6	CAN	Inverter comms
7	RS232	PC comms (service)
8	RS485-1 and RS485-2	PC comms or parallel battery connection

№	Device	Purpose
9	RUN operation indicator	Operating status
10	ALM alarm indicator	Warnings and alarms
11	SOC charge indicators	State of charge
12	“+” terminal	Battery positive
13	“−” terminal	Battery negative
14	Power button	Switching on and off
15	Circuit breaker	Disconnects input and output

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4.1 LED indicators

Table 1. Status indicators

State	Mode	ON/OFF LED9	RUN LED8	ALARM LED7	SOC LED6–1	Note
		●	●	●	●●●●●●	
Off	Sleep	OFF	OFF	OFF	OFF	All indicators off
Standby	Normal	ON	Flash 1	OFF	See table 2	—
	Warning	ON	Flash 1	Flash 3		
Charge	Normal	OFF	OFF	OFF		
	Warning	ON	ON	Flash 3		Overvoltage warning, no flashing
	Overvoltage protection	ON	ON	OFF	ON	
	Temperature, overcurrent, emergency protection	ON	OFF	ON	OFF	
Discharge	Normal	ON	Flash 3	OFF	See table 2	—
	Warning	ON	Flash 3	Flash 3		
	Deep discharge protection	OFF	Flash 2	OFF	OFF	
	Overcurrent, short circuit, temperature, emergency protection	ON	OFF	ON	OFF	

Table 2. State of charge (SOC) indicators

SOC	Charge						Discharge					
	LED6	LED5	LED4	LED3	LED2	LED1	LED6	LED5	LED4	LED3	LED2	LED1
0–16.6 %	OFF	OFF	OFF	OFF	OFF	Flash 2	OFF	OFF	OFF	OFF	OFF	ON
16.6–33.2 %	OFF	OFF	OFF	OFF	Flash 2	ON	OFF	OFF	OFF	OFF	ON	ON
33.2–49.8 %	OFF	OFF	OFF	Flash 2	ON	ON	OFF	OFF	OFF	ON	ON	ON
49.8–66.4 %	OFF	OFF	Flash 2	ON	ON	ON	OFF	OFF	ON	ON	ON	ON
66.4–83.0 %	OFF	Flash 2	ON	ON	ON	ON	OFF	ON	ON	ON	ON	ON
83.0–100 %	Flash 2	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
● RUN	ON						Flash 3					

Table 3. Flashing modes

Mode	Steady	Off
Flash 1	0.25 s	3.75 s
Flash 2	0.5 s	0.5 s
Flash 3	0.5 s	1.5 s

4.2 Sound signals

1. Fault: 0.25 s beep every second.
2. Protection tripped: 0.25 s beep every 2 s (except overvoltage and deep discharge protection). Warning:
3. 0.25 s beep every 3 s (except overvoltage and low-voltage warnings).

4.3 RESET button

RESET

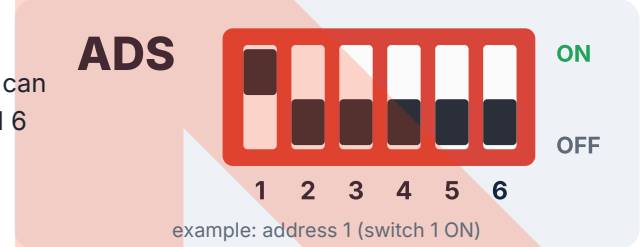
1. When the BMS is asleep, press the button for 1 s: the protection board wakes up and the indicators light for 0.5 s.
2. When the BMS is running, hold the button 3–6 s: the indicators light one by one from minimum to maximum for 0.5 s, then the system goes to sleep.
3. When the BMS is running, hold the button 6–10 s and release: the board restarts and the indicators show the current charge level.

4.4 Power button

1. When the BMS is in deep sleep, pressing the power button powers the protection board, and the indicators light one by one starting with LED1 for 0.5 s. When the BMS is running, switch
2. off the power button and wait 1–3 s: the system shuts down.

4.5 Address DIP switch

When several units are connected in parallel, give each its own address with the DIP switch on the BMS so their data can be told apart. Maximum 15 units in parallel. Switches 5 and 6 are reserved and not used.

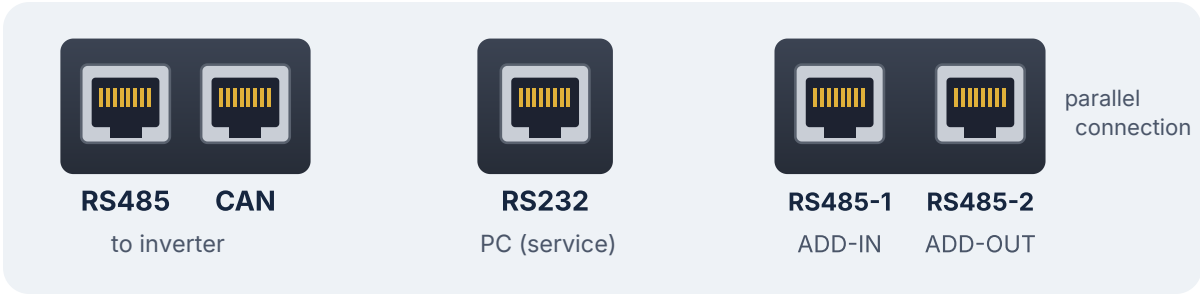


example: address 1 (switch 1 ON)

Address (binary)	Switch positions				Purpose
	4	3	2	1	
0001 (1)	OFF	OFF	OFF	ON	Unit 1: master or single
0010 (2)	OFF	OFF	ON	OFF	Unit 2
0011 (3)	OFF	OFF	ON	ON	Unit 3
0100 (4)	OFF	ON	OFF	OFF	Unit 4
0101 (5)	OFF	ON	OFF	ON	Unit 5
0110 (6)	OFF	ON	ON	OFF	Unit 6
0111 (7)	OFF	ON	ON	ON	Unit 7
1000 (8)	ON	OFF	OFF	OFF	Unit 8
1001 (9)	ON	OFF	OFF	ON	Unit 9
1010 (10)	ON	OFF	ON	OFF	Unit 10
1011 (11)	ON	OFF	ON	ON	Unit 11
1100 (12)	ON	ON	OFF	OFF	Unit 12
1101 (13)	ON	ON	OFF	ON	Unit 13
1110 (14)	ON	ON	ON	OFF	Unit 14
1111 (15)	ON	ON	ON	ON	Unit 15

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4.6 Comms ports



Port	RS485 (to inverter)	CAN (to inverter)	RS232 (PC)	RS485-1 / RS485-2 (parallel)
Pins 1, 8	RS485-B1	NC	1, 2, 6: NC	RS485-B2
Pins 2, 7	RS485-A1	NC	3: TX	RS485-A2
Pin 4	NC	CANH1	4: RX	NC
Pin 5	NC	CANL1	5: GND	NC (ADD-IN) / OUT (ADD-OUT)
Pins 3, 6	GND	GND	—	GND

NC: not connected. GND: common wire. RJ45 pin numbering is standard (1–8).

4.7 Parallel connection

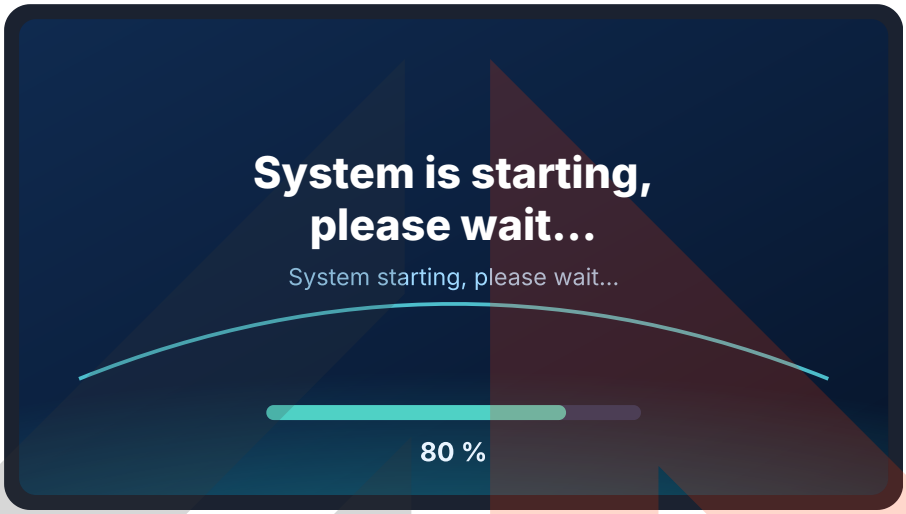
The units are daisy-chained: port RS485-2 (ADD-OUT) of one unit to port RS485-1 (ADD-IN) of the next. The inverter connects to the RS485 or CAN port of unit 1 (master). Give each unit its own address with the DIP switch (see 4.5).



5 Display

> **TWO DISPLAY VERSIONS**
> Sections 5.1–5.7 describe the **MF-48314S / DT-48314S** display. **GP-48314S** units have a different touchscreen: it is described in section 5.8.

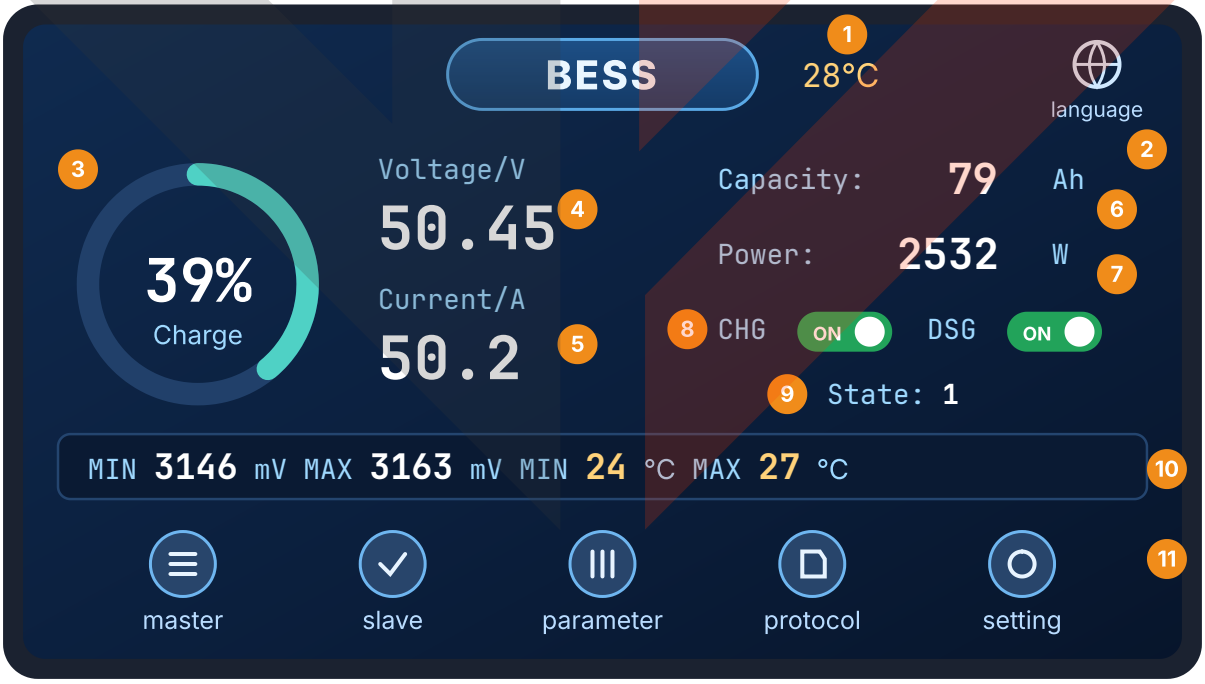
5.1 Start screen



At power-on the system start-up progress is shown in percent

5.2 Main screen

The main screen shows summary data of the parallel system: average state of charge (SOC), maximum and minimum cell voltage, maximum and minimum temperature, average voltage and total system current, average remaining capacity, operating power, charge and discharge MOS switch status, and the language button.



1	28°C	Temperature
2	language	Interface language: English / Chinese
3	39% Charge	Average charge level; Charge: charging, Discharge: discharging
4	Voltage/V	Average system voltage, V
5	Current/A	Total system current, A
6	Capacity	Average remaining capacity, Ah
7	Power	Operating power, W
8	CHG / DSG	Charge and discharge MOS switches: ON = allowed
9	State	System status
10	MIN / MAX mV, °C	Minimum and maximum cell voltage, minimum and maximum temperature
11	master … setting	Menu: master = main screen, slave = data of each unit, parameter = parameters, protocol = protocol, setting = system

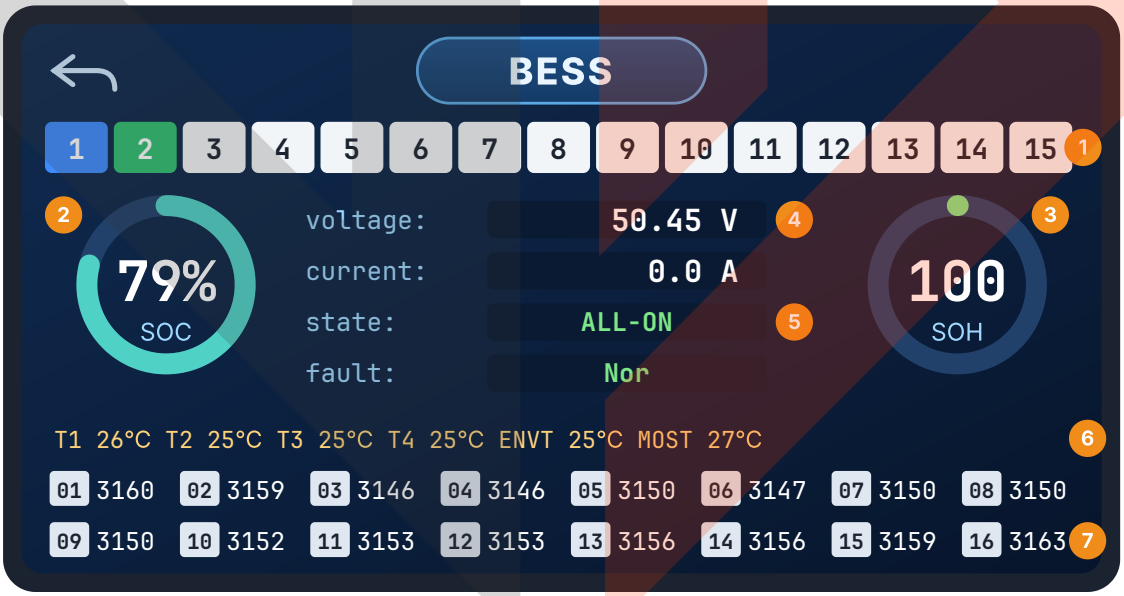
5.3 Language

The display interface supports English and Chinese. The switch button (language) is in the top right corner of the main screen.

5.4 Unit screen (slave)

At the top, unit selection by address; in the middle, state of charge (SOC) and state of health (SOH), voltage and current, charge/discharge status and fault status; at the bottom, cell voltages and unit temperatures, ambient and MOS switch temperature.

Unit number colour: **blue** = selected, **green** = connected, **white** = not connected.



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1	1 … 15	Unit addresses (blue = selected, green = connected, white = not connected)
2	SOC	Charge level of the selected unit
3	SOH	Battery state of health, %
4	voltage / current	Unit voltage and current
5	state / fault	Charge/discharge status (ALL-ON = both allowed); faults (Nor = normal)
6	T1-T4, ENVT, MOST	Cell temperatures, ambient temperature, MOS switch temperature
7	01 … 16	Voltage of each of the 16 cells, mV

5.5 Parameters

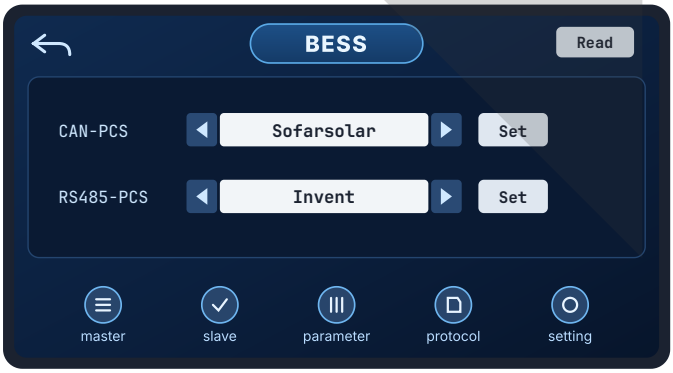
On the parameters page you can set the protection thresholds. Each button opens its own group of settings.



Button	Parameters
cell ov&uv	Cell overvoltage and undervoltage
batt ov&uv	Unit overvoltage and undervoltage
ambient ot&ut	High and low ambient temperature
voltage diff	Cell voltage difference
charge oc	Charge overcurrent
dischg oc	Discharge overcurrent
mos ot	MOS switch overheat
charge ot&ut	High and low charge temperature
dischg ot&ut	High and low discharge temperature
soc low	Low state of charge

5.6 Inverter comms protocol

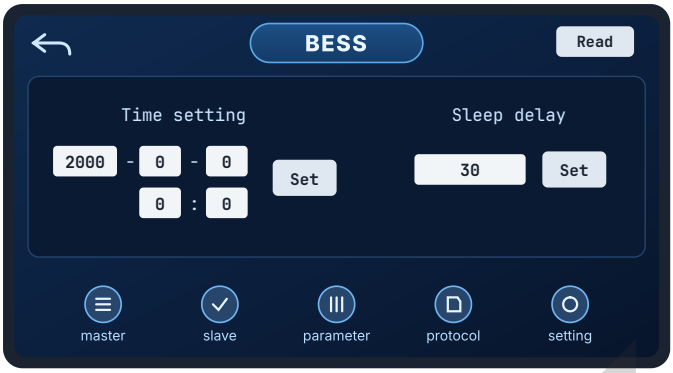
CAN: Pylon, Growatt, Goodwe, Sofarsolar, Victron, Voltronic, LXP, Deye, Ginlong, SMA.
RS485: Pylon, Growatt, Voltronic, LXP, Deye, Invent, SMA.



•	CAN-PCS	Inverter protocol over CAN
•	RS485-PCS	Inverter protocol over RS485
•	◄ ►	Choose a protocol from the list
•	Set	Save selection
•	Read	Read current settings from the BMS

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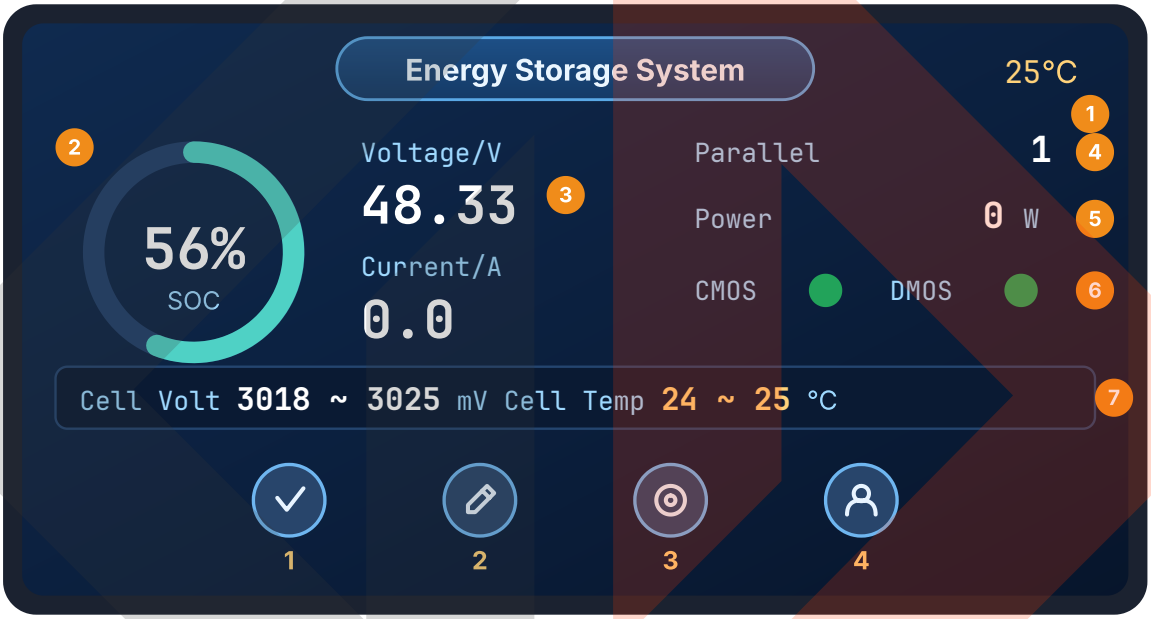
5.7 System settings



•	Time setting	Date (year-month-day) and time (hours:minutes)
•	Sleep delay	Delay before sleep mode
•	Set	Save value
•	Read	Read current settings from the BMS

5.8 GP-48314S display

After power-on the display shows a **Loading...** bar and, once the system has started, switches to the main screen by itself. The main screen shows the key data in real time, and all menus are opened with the four buttons at the bottom.

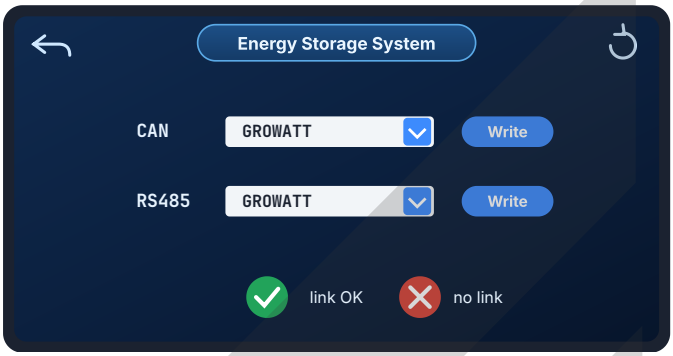


1	25°C	Temperature
2	SOC	State of charge, %
3	Voltage/V, Current/A	Voltage (V) and current (A)
4	Parallel	Number of units in parallel
5	Power	Power, W
6	CMOS / DMOS	Charge and discharge MOS switches: green = on
7	Cell Volt, Cell Temp	Minimum ~ maximum cell voltage (mV) and cell temperature (°C)

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Button	Menu	Contents
1	Slave Setting	Slave units: unit selection by number, its voltage, current, SOC, SOH, MOS switches, temperatures and voltages of the 16 cells; parameter calibration so the slave units work in step with the master. After a change, tap **Select Confirm**.
2	Communication Setting	CAN and RS485 comms protocols with the inverter and other devices
3	System Setting	Language, screen brightness and backlight, hardware version
4	Login / Parameter Setting	Administrator login and main battery parameters

Button 2: inverter comms



1. On the main screen, tap the **2** button.
2. For **CAN** and for **RS485** separately, choose your inverter's protocol in the list (e.g. GROWATT) and tap **Write**.
3. The system checks the link. **Green tick:** link OK. **Red cross:** no link: check the cable, baud rate and address and set up again.
4. After the check the screen returns to the main screen by itself.

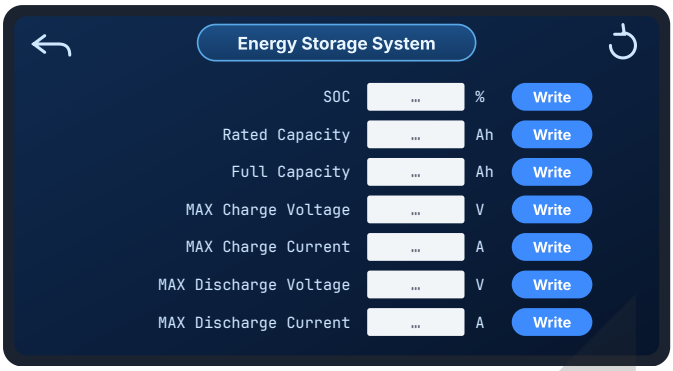
The protocol must be one your inverter supports. For inverters from our shop it is given in the battery-to-inverter connection guide.

Button 3: system settings



•	Language settings	Interface language. The languages include **Ukrainian**: tap it and the interface switches immediately.
•	Screen settings	Screen brightness and backlight time (e.g. 30 s); save with the tick button
•	Version information	Hardware model, software version, serial number (SN): for service

Button 4: login and battery parameters



1. Tap the **4** button: a numeric keypad appears.
2. Enter the administrator password **666888** and tap **OK**. With the correct password the parameters page opens; with a wrong one the screen returns to the main screen,
   and the parameters cannot be changed.
3. Without the password the parameters can only be viewed.
4. Each value is saved with its own **Write** button: tick = written, cross = not written.

Parameter	Meaning
SOC	State of charge, %
Rated Capacity	Rated capacity, Ah
Full Capacity	Full capacity, Ah
MAX Charge Voltage	Maximum charge voltage, V
MAX Charge Current	Maximum charge current, A
MAX Discharge Voltage	End-of-discharge voltage, V
MAX Discharge Current	Maximum discharge current, A

CAUTION
Change parameters only when you know exactly the values needed. Wrong settings can damage the battery or the inverter.

6 Warranty terms

Read these terms carefully and keep them.

1. If the product fails during the warranty period under normal use in accordance with the manual, it will be repaired. Parts replaced during the warranty period become the property of the manufacturer.
2. For replacement or warranty repair, hand in this warranty card together with the product.
3. Free warranty repair is not provided in the following cases:
   1. damage due to breach of the manual's requirements for use, maintenance and repair, or use of non-original parts;
   2. fault or damage due to improper storage (battery failure from long periods without charging);
   3. fault or damage due to power sources and loads outside the specified voltage range;
   4. fault or damage due to DIY repair, disassembly or modification;
   5. damage to the coating and appearance of the case;
   6. outer packaging and accessories;
   7. damaged, altered or illegible labels, seals and serial numbers (SN).
4. Fault or damage due to force majeure, i.e. objective events that cannot be foreseen, prevented or overcome: natural disasters (floods, fires, explosions, lightning,

earthquakes, storms) and social events (wars, unrest).

5. This manual is valid only in the region of sale; the final interpretation rests with the manufacturer.
6. Keep the manual: it is not issued separately.
7. If the seller’s name and stamp are missing from the card, ask the seller for a document with the purchase date and seller’s name. If there is no such document, contact the seller you bought the product from. If the product was bought online, provide proof of the purchase date: an invoice, order number or screenshot of the order history.

7 Paid service

If the product does not meet the warranty terms, repair is paid: the cost is based on parts and labour, you receive an estimate, and the repair is carried out after your consent and payment.

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Warranty card

This card is the warranty document for the product. Keep it.

Product name	
Serial number	
Purchase date	
Seller	
Seller address	
Buyer	
Buyer address	
Buyer phone	
Buyer e-mail	

Seller stamp

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