



LUMO Powerall | User Manual



MODEL NUMBER

Powerall 1 | Powerall 1.5 | Powerall 2 | Powerall 2.5

Disclaimer

Important Information Regarding Product Usage:

- After reading, please keep the user manual in a safe place for future reference.
- Failure to operate this product accurately may result in **severe** injury to yourself or others, as well as damage to the product and property.
- By using this product, you will be deemed to have understood, acknowledged, and accepted the terms and content of this document in its entirety. Users are responsible for their own actions and all consequences arising from them. The company shall not be liable for any losses caused by the user's failure to use the product in accordance with the User Manual.
- Subject to compliance with laws and regulations, the company has the final right of interpretation of this document and all related documents of this product. As product information is updated, revised, or terminated without notice, please pay attention to the latest product information on the official website.

Safety Tips and Terms of Use:

- Read all the safety tips, warning messages, terms of use, and disclaimers carefully.
- Refer to the terms of use and disclaimer at **[insert URL]** and review stickers on the product before use.
- Users take full responsibility for all usage and operations. Familiarize yourself with the related regulations in your area.
- You are solely responsible for being aware of all relevant regulations and using LUMO products in a way that is compliant.

Meaning of Abbreviations:

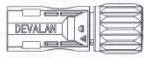
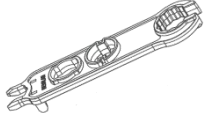
AC	Alternating Current
DC	Direct Current
PV	Photovoltaic
BMS	Battery Management System
PCS	Power Conversion System
RJ45	Registered Jack 45
SOC	State Of Charge
C	Charge C-rate
RS485	RS485 Communication Interface
CAN	Controller Area Network

Safety Symbols:

This product contains the following symbols, please pay attention to identifying.

Symbols	Description
	Observe enclosed documentation
	Danger. Risk of electric shock!
	Danger of high voltages. Danger to life due to high voltages in the Energy storage system
	Hot surface
	CE certification
	Do not touch the product in 5mins after shutdown
	Comply with RoHS standard
	The Energy storage system should not be disposed together with the household waste.

Parts list

NO.	Picture	Item	QTY	Specification	Source
1		PV Negative Terminal	1	VP-D4B-CTSF4	PV
2		PV Negative Pole Insert	1	VP-D4B-CTSF4	PV
3		PV Positive Terminal	1	VP-D4B-CTSF4	PV
4		PV Positive Pole Insert	1	VP-D4B-CTSF4	PV
5		PV Hand Unlocking Tool	1	D4 Hand unlocking tool	PV
6		PV Ring Unlocking Tool	1	D4 Ring unlocking tool	PV
7		Power Cable	1	2m	AC
8		Rubber Pad	4	26*21*13mm	standard configuration
9		Wall-Mounted Bracket	2	80*40*2mm	standard configuration
10		Wheel (With Brake)	2	1 Inch	Optional
11		Wheel	2	1 Inch	Optional

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1. Specifications

MODEL	Powerall 1	Powerall 1.5	Powerall 2	Powerall 2.5
INVERTER OUTPUT				
Rated Output Power	1,000W	1,500W	2,000W	2,500W
Max. Peak Power	2,000VA	3,000VA	4,000VA	5,000VA
Rated Output Voltage	230Vac			
Waveform	Pure Sine Wave			
Power Factor	1			
Frequency	50Hz			
Auto Switch Period	< 10ms (typical)			
THD	3%			
BATTERY				
Battery Type	LiFePO4			
Battery Energy	1.28kWh		2.56kWh	
Battery Capacity	100Ah			
Battery Rated Voltage	12.8V		25.6V	
Battery Working Voltage Range	11.2 ~ 14.4V		22.4 ~ 28.8V	
Standard Charge current	50A			
Maximum Charge Current	100A			
Cycling Lifespan	6000 (80%DOD,0.5C,25°C)			
PV CHARGE				
Solar Charge Type	MPPT			
Max. Output Power	700W	900W	1,500W	1700W
Max. MPPT Charging Current	50A		60A	
Max. Voltage of Open Circuit	70V		108V	
MPPT Voltage Range	15~60Vdc	15~80Vdc	30~90Vdc	30~90Vdc
AC CHARGE				
Max. AC Charge Power	750W	1,500W		
Max. AC Charging Current	60A			
Rated Input Voltage	220/230Vac			
Input Voltage Range	90 ~ 280Vac			
GRID/GENERATOR INPUT				
Input Voltage Range	90 ~ 280Vac			

Bypass Overload Current	20A	30A
EFFICIENCY		
MPPT Tracking Efficiency	99.9%	
GENERAL		
Communication	USB	
Protection Degree	IP20 , Indoor Only	
Charging temperature range	0°C~45°C	
Noise	≤40dB	
Storage time / temperature	6 months @25°C;3 months @35°C;1 month @45°C	
Dimensions	340*270*263 mm	400*343*331 mm
Cooling Method	Forced Air Cooling	
USB FAST CHARGE		
USB	18W+18W	
Type-C	18W+18W	
CERTIFICATION		
Safety	MSDS, UN38.3, IEC61000-6:2019	
RoHS	Yes	

2. Safety Instructions

2.1 Usage

1. Keep the product away from heat sources like fires or heating furnaces.
2. Avoid exposing the product to liquids, and refrain from using it in rainy or humid conditions.
3. Do not use the product in environments with strong static electricity or magnetic fields.
4. Do not disassemble or pierce the product with sharp objects.
5. Avoid using wires or metal objects that may cause a short circuit.
6. Only use authorized components and accessories. For replacements or **after-sales** queries, check official LUMO channels.
7. Adhere to the specified operating temperature in the user manual to prevent potential hazards.
8. Avoid stacking heavy objects on the product.
9. Do not forcibly lock the fan during use or place the product in un-ventilated or dusty areas.
10. Prevent impacts, falls, or severe vibrations during use. In case of external impact, turn off the power immediately and secure the product during transportation.
11. If the product gets immersed in water, place it in a safe open area and wait until it is completely dry. Do not use it again if water is found inside. Use fire extinguishers in the recommended order if the product catches fire.
12. Clean product ports with a dry cloth.
13. Place the product on a flat surface to avoid damage. If severely damaged, turn it off, place the battery in an open area, and dispose of it according to local regulations.
14. Keep the product out of reach of children and pets.
15. Store the product in a dry and well-ventilated place.
16. In wet environments, use moisture barrier bags to prevent the product from getting soaked. If water is found inside, do not use it and contact LUMO Customer Service.

2.2 Disposal Guide

Battery Disposal

1. Full **Discharge: Fully** discharge the battery before placing it in a designated battery recycling bin.
2. Professional Disposal: If the battery cannot be fully discharged or is damaged, contact a certified battery recycling company.
3. Over-Discharged Batteries: Dispose of non-rechargeable, over-discharged batteries in a recycling bin or professional facility.
4. Avoid Landfills: Never dispose of batteries in regular trash or landfills. Use designated recycling points.
5. Labeling and **Packaging: Properly** label and package batteries to prevent short-circuiting and leakage.
6. Handling Damaged Batteries: Use protective gloves and non-conductive containers for damaged or leaking batteries.
7. Community **Programs: Utilize** community battery recycling programs and drop-off locations.
8. Educate and Advocate: Promote responsible battery disposal practices and support relevant initiatives.

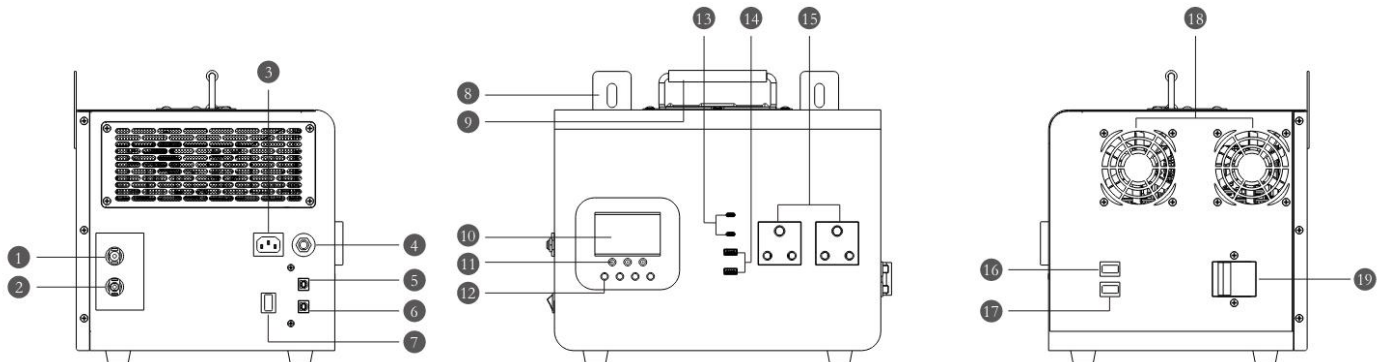
Inverter Disposal

1. **Deactivation: Ensure** the inverter is completely deactivated and disconnected from all power sources.
2. Component Separation: Separate the inverter into main **components**, if **possible**, for easier recycling.
3. E-Waste Disposal: Dispose of inverters at designated e-waste recycling facilities.
4. Professional Recycling: Contact a certified e-waste recycling company for proper disposal.
5. Documentation: Obtain disposal certification from the recycling company.
6. Avoid Landfills: Do not dispose of inverters in landfills. Use e-waste recycling options.
7. Community Programs: Participate in community e-waste recycling programs and events.
8. Educate and Advocate: Promote and support responsible e-waste disposal practices.

3. Getting Started

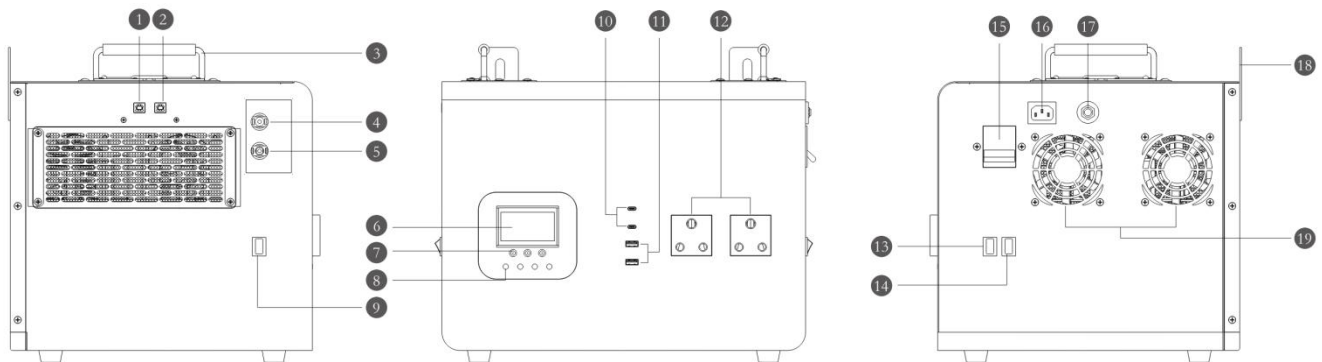
3.1 Product Details

Powerall 1 and Powerall1.5

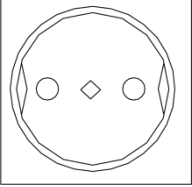
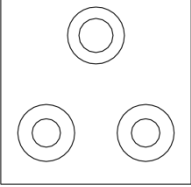
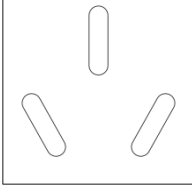
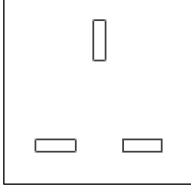


① PV Positive	② PV Negative	③ AC Input	④ AC Input Overload protector
⑤ BMS communications port	⑥ Inverter communications port	⑦ USB Switch	⑧ wall-mounted bracket
⑨ Handle	⑩ LCD screen	⑪ Inverter LED Indicator	⑫ Operation buttons
⑬ Type-C charging port	⑭ USB charging port	⑮ AC socket(ZA/SA)	⑯ Power Switch
⑰ BMS Switch	⑱ Cooling fan	⑲ AC Output Breaker	

Powerall 2 and Powerall2.5



① BMS communications port	② Inverter communications port	③ Handle	④ PV Positive
⑤ PV Negative	⑥ LCD screen	⑦ Inverter LED Indicator	⑧ Operation buttons
⑨ USB Switch	⑩ Type-C charging port	⑪ USB charging port	⑫ AC socket(ZA/SA)
⑬ Power Switch	⑭ BMS Switch	⑮ AC Output Breaker	⑯ AC Input
⑰ AC Input Overload protector	⑱ wall-mounted bracket	⑲ Cooling fan	

			
EN/EU	ZA/SA	CN/AU	BS

***The AC output can be configured to the European standard, South African standard, or national standard plug.**
The actual product availability is primarily based on the current national electricity standard for sale.

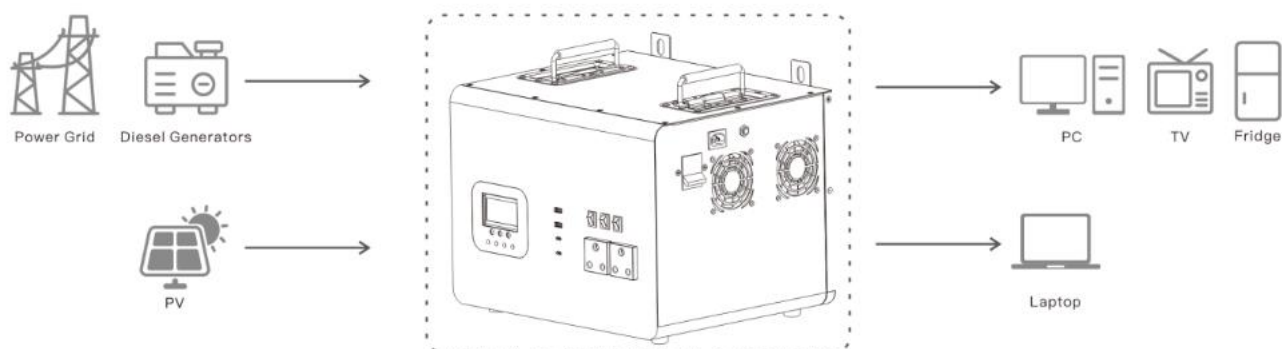
3.2 Start up

****BMS Switch**:** Controls the power supply to the battery BMS. This switch needs to be turned on before use.

****Power Switch**:** The main power switch of the machine.

1. Turn on the 'BMS Switch'. This switch must be on to start the machine or charge the battery.
2. Turn on the 'Power Switch'. The machine will power up, and after a beep, it will be ready for operation.
3. Turn on the 'AC Output Breaker' on the right side to supply power to the outlets on the panel.
4. Turn on the 'USB Switch' on the left side to power the USB and Type-C ports on the panel.

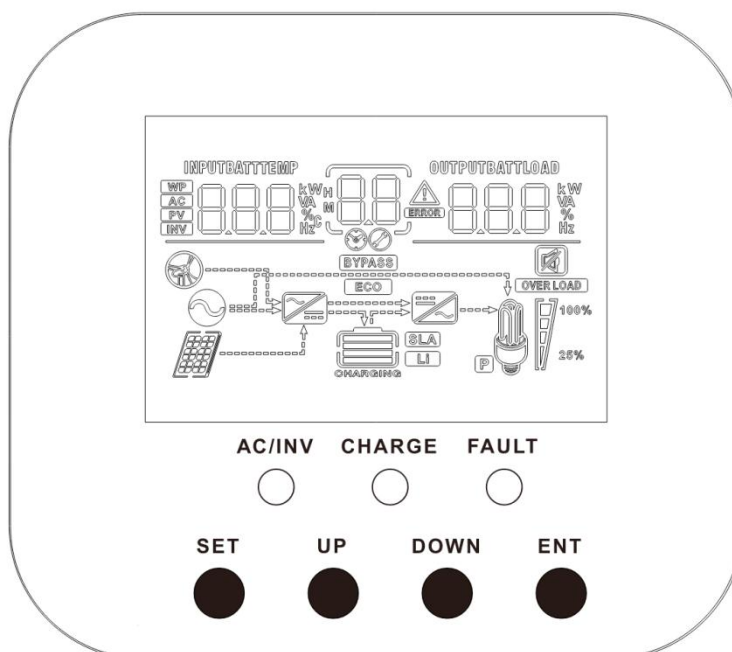
3.3 Solar Integrated Connection



Integrated PV with an MPPT control scheme and supports hybrid charging by default, allowing both grid and PV to charge the battery simultaneously, fully charging the battery within one hour. When PV supply is sufficient, it can charge the battery and power the load simultaneously.

3.4 LCD Screen

After the switch is turned on, the LED indicator will light up or flash. The meaning of the LED indicator is as follows.



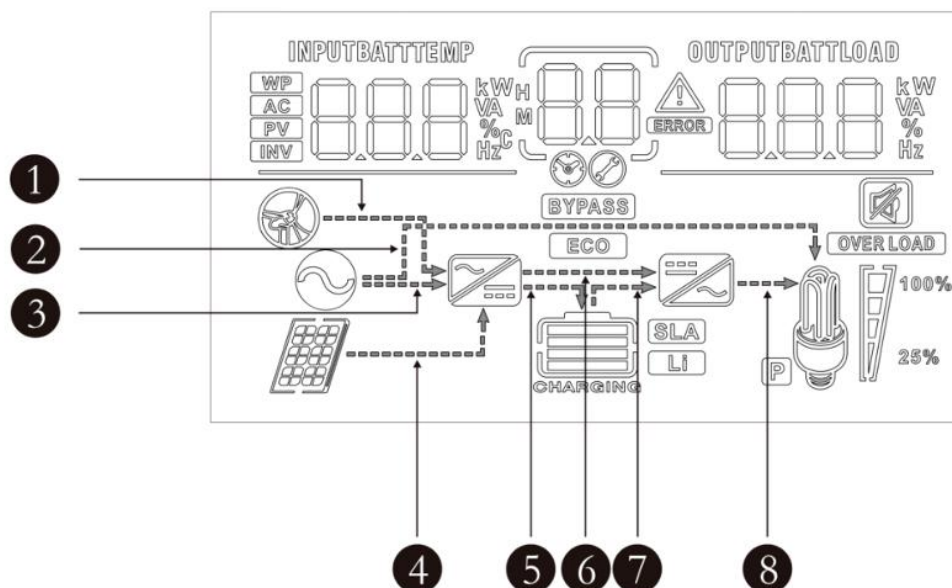
Operation **button's** introduction

Function buttons	Description
SET	N/A (Only for Maintenance)
UP	Previous choice
DOWN	Next choice
ENT	N/A (Only for Maintenance)

LED blinking description

Indicators	Colors	Description
AC/INV	Yellow	Steady on: Mains output
		Flash: Inverter output
CHARGE	Green	Flash: Battery charging
		Steady on: Charging completed
FAULT	Red	Steady on: Fault state

Screen Introduction

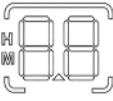


Serial number meaning

① The arrow is not displayed	⑤ Indicates charging the battery
② Indicates the grid supplying power to the load	⑥ The arrow is not displayed
③ Indicates grid supplying power to the charging circuit	⑦ Indicates the battery terminal supplying power to the inverter circuit
④ Indicates PV module supplying power to the charging circuit	⑧ Indicates the inverter circuit supplying power to the load

Icon Meaning

Icons	Functions	Icons	Functions
	Indicates that the AC input terminal has been connected to the grid		Indicates that the inverter circuit is working
	Indicates that the AC input mode in APL mode (wide voltage range)		Indicates that the machine is in the Mains Bypass mode
	Indicates that the PV input terminal has been connected to the solar panel		Indicates that the AC output is in an overload state
	indicates that the remaining battery is 0%~24%		indicates that the load percentage is 0%~24%
	indicates that the remaining battery is 25%~49%		indicates that the load percentage is 25%~49%
	indicates that the remaining battery is 50%~74%		indicates that the load percentage is 50%~74%

	indicates that the remaining battery is 75%~100%		indicates that the load percentage is $\geq$ 75%
	Indicates that the battery type of the machine is a lithium battery		Indicates that the buzzer is not enabled
	Indicates that the current battery type of the machine is a lead-acid battery		Indicates that the machine has an alarm
	Indicates that the battery is in charging state		Indicates that the machine is in a fault condition
	Indicates that the AC/PV charging circuit is working		Indicates that the machine is in setup mode
	Indicates that the AC output terminal has an AC voltage output		The parameters displayed in the middle of the screen: 1. In the non-setup mode, the alarm or fault code is displayed. 2. In the setup mode, the currently set parameter item code is displayed.

Parameters display on the left side of the screen: input parameters

	Indicates AC input
	Indicates PV input
	Indicates inverter circuit
	This icon is not displayed
	Display battery voltage, battery charge total current, mains charge power, AC input voltage, AC input frequency, PV input voltage, internal heat sink temperature, software version

Parameters display on the right side of the screen: Output parameters

	Indicates output voltage, output current, output active power, output apparent power, battery discharge current, software version; in setup mode, displays the set parameters under the currently set parameter item code
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Real-time data viewing method

On the LCD main screen, press the “UP” and “DOWN” buttons to scroll through the real-time data of the machine.

NO.	Parameters on the left side of the screen	Parameters in the middle of the screen	Parameters on the right side of the screen
1	INPUT BATT V (Battery input voltage)	Fault code	OUTPUT LOAD V (Output load voltage)
2	BMS Battery Voltage		BMS Battery SOC
3	PV TEMP °C (PV charger heat-sink temperature)		PV OUTPUT KW (PV output power)
4	PV INPUT V (PV input voltage)		PV OUTPUT A (PV output current)
5	INPUT BATT A (Input battery current)		OUTPUT BATT A (Battery output current)
6	INPUT BATT KW (Battery input power)		OUTPUT BATT KW (Battery output power)
7	AC INPUT Hz (AC input frequency)		AC OUTPUT LOAD Hz (AC output frequency)
8	AC INPUT V (AC input voltage)		AC OUTPUT LOAD A (AC output load current)
9	INPUT V (For maintain)		OUTPUT LOAD KVA (Load apparent power)
10	INV TEMP °C (AC charge or battery discharge Heat-sink temperature)		INV OUTPUT LOAD KW (Load active power)
11	APP software version		Boot-loader software version
12	Model Battery Voltage Rating		Model Output Power Rating
13	Model PV Voltage Rating		Model PV Current Rating

4. Protection

4.1 Protective function

No.	Protections	Description
1	PV current/power limiting protection	When charging current or power of the PV array configured exceeds the PV rated, it will charge at the rated.
2	PV night reverse-current protection	At night, the battery is prevented from discharging through the PV module because the battery voltage is greater than the voltage of PV module.
3	Mains input over voltage protection	When the mains voltage exceeds 280V (230V model), the mains charging will be stopped and switched to the inverter mode.
4	Mains input under voltage protection	When the mains voltage is lower than 170V (230V model / UPS mode), the mains charging will be stopped and switched to the inverter mode.
5	Battery over voltage protection	When the battery voltage reaches the over-voltage disconnection point, the PV and the mains will be automatically stopped to charge the battery to prevent the battery from being overcharged and damaged.
6	Battery low voltage protection	When the battery voltage reaches the low voltage disconnection point, the battery discharging will be automatically stopped to prevent the battery from being over-discharged and damaged.
7	Load output short circuit protection	When a short-circuit fault occurs at the load output terminal, the AC output is immediately turned off and turned on again after 1 second.
8	Heat sink over temperature protection	When the internal temperature is too high, the machine will stop charging and discharging; when the temperature returns to normal, charging and discharging will resume.
9	Overload protection	Output again 3 minutes after overload protection and turn the output off after 5 consecutive times of overload protection until the machine is re-powered. For the specific overload level and duration, refer to the technical parameters table in the manual.
10	PV reverse polarity protection	When the PV polarity is reversed, the machine will not be damaged.
11	AC reverse protection	Prevent battery inverter AC current from being reversely input to bypass.
12	Bypass over current protection	Built-in AC input over-current protection circuit breaker.
13	Battery input over current protection	When the discharge output current of the battery is greater than the maximum value and lasts for 1 minute, the AC input would switch to load.

14	Battery input protection	When the battery is reversely connected or the inverter is short-circuited, the battery input fuse in the inverter will blow out to prevent the battery from being damaged or causing a fire.
15	Charge short-circuit protection	When the external battery port is short-circuited in the PV or AC charging state, the inverter will protect and stop the output current.

4.2 Troubleshooting

Fault code	Fault	Measures
Display	No display on the screen	Check if the battery air switch or the PV air switch has been closed; if the switch is in the "ON" state; press any button on the screen to exit the screen sleep mode.
【06】	Battery over-voltage protection	Measure if the battery voltage exceeds rated and turn off the PV array air switch and mains air switch.
【01】 【04】	Battery under-voltage protection	Charge the battery until it returns to the low voltage disconnection recovery voltage.
【30】 【31】 【32】 【63】	Battery low capacity alarm	Charge the battery until it returns to the recovery capacity.
【21】	Fan failure	Check if the fan is not turning or blocked by foreign object.
【19】 【20】	Heat sink over temperature protection	When the temperature of the device is cooled below the recovery temperature, normal charge and discharge control is resumed.
【13】 【14】	Bypass overload protection, Inverter overload protection	① Reduce the use of power equipment; ② Restart the unit to resume load output.
【17】	Inverters short-circuit protection	① Check the load connection carefully and clear the short-circuit fault points; ② Re-power up to resume load output.
【09】	PV over-voltage	Use a multi-meter to check if the PV input voltage exceeds the maximum allowable input voltage rated.
【03】	Battery disconnected alarm	Check if the battery is not connected or if the battery circuit-breaker is not closed.
【26】	Inverted AC output backfill to bypass AC input	Disconnect the AC input, PV input and battery input. After the screen is off, only connect the battery and start up. If fault 26 is reported, it indicates that the AC input relay switch is short-circuited, and you need to contact the manufacturer to replace it.

5.Caution

Safety Precautions:

- 1 . Fire Safety: Keep a fire extinguisher nearby and ensure the storage area has smoke detectors.
- 2 . Regular Inspections: Periodically check batteries for swelling, leakage, or damage.
- 3 . Avoid Flammable Materials: Do not store batteries near flammable or combustible materials.
- 4 . Clear **Labelling**: Clearly label the storage area with hazard warnings and emergency contact information.

Maintenance:

- 1 . Clean Contacts: Keep battery contacts clean and free of dust and debris.
- 2 . Stock Rotation: Rotate stock to use older batteries first, ensuring none are stored for too long.
- 3 . Charge Monitoring: Regularly monitor the charge level of stored batteries and recharge as necessary to maintain optimal levels.

6. Transportation & Storage

6.1 Transportation

1. Upon receiving the shipment, check the package for damage.
2. If there are missing accessories or the product is damaged, notify the dealer within 7 days of receipt.
3. Handle the machine with care during transportation; any fall or strong shock may damage the machine.

6.2 Open package

1. Open Carefully: Be cautious when opening the package to avoid damage.
2. Verify Contents: Ensure all relevant parts are included.
3. Inspect for Damage: Check for any signs of damage or defects.
4. Test Functionality: Perform a basic functionality test if possible.
5. Keep Documentation: Retain packaging, manuals, and receipts.
6. Report Issues: Contact the seller promptly if there are any issues.

6.3 Storage

1. Clean and Dry Environment: Store the machine in a clean and dry environment to prevent damage.
2. Temperature Range: The recommended storage temperature is between 0°C and 35°C.
3. Partial Charge: Store lithium batteries at a partial charge (around 50%) to prolong their lifespan.
4. Avoid Extreme Temperatures: Keep batteries away from both hot and cold extreme temperatures to prevent damage.
5. Ventilation: Ensure proper ventilation around the battery storage area to avoid overheating.
6. Isolation: Store batteries separately from other items to avoid contact and potential short circuits.

6.4 Technical Support

Please contact our official channel:



Support@Lumoenergy.co.za



www.Lumoenergy.co.za

