



GermanSolar



# LiFePO4 Battery Specification

Model: GSA-12100

## GENERAL INFORMATION

This specification defines the performance of rechargeable LiFePO4 battery pack GSA-12100 manufactured by GermanSolar describes the type, performance, technical characteristics, warning and caution of the battery pack.

## BATTERY SPECIFICATION (@25±5°C)

Items		Characteristics
Normal capacity		100Ah
Nominal energy		1.28KWh
Nominal voltage		12.8V
Internal resistance		≤30mΩ @1kHz AC
Series parallel application		Max support 4 in series or in parallel
Normal charge voltage		14.6±0.2V
Float charge voltage (for Standby use)		13.8±0.2V
Allowed MAX charge current		100A 30min @25±5°C
Recommended charge current		≤50A
Allowed MAX discharge current		100A 30min @25±5°C
Pulse discharge current		Withstand the 300A/3.5s
End of discharge voltage		(2.50±0.05V)*4
Series parallel application		Max support 4 in series or in parallel
Dimension		Length 307±2mm
		Width 168±2mm
		Height 211±2mm
Weight (No accessories)		About:12.5Kg
Operation temperature	Charge	0~45°C
	Discharge	-20~60°C
Self-discharge rate	Residual capacity	≤3%/month; ≤15%/year
	Recover capacity	≤1.5%/month; ≤8%/year
Storage environment	≤1month	-20~+60°C, 5~75%RH
	≥3month	-10~+45°C, 5~75%RH
	Recommended environment	15~35°C, 5~75%RH



## ELECTRICAL CHARACTERISTICS & TEST CONDITION

**Testing Conditions:** Ambient Temperature: 25±5°C; Humidity: 45%~75%.

**Normal charge:** Charge battery under CC(0.33C)/CV(14.6V) mode until over charge protection or the charge current reduce to 0.05C, and then rest for 1h.

Items	Criterion		Characteristics	
Normal Capacity	100Ah		After Normal charge, discharge @0.33C current to the end of discharge voltage.	
Internal Impedance	≤30mΩ		@50% SOC @1kHz AC internal resistance test instrument.	
Short circuit protection	Auto cutoff load when short circuited		Connect the positive and negative of this battery pack through a lead with 0.1Ω resistance.	
Cycle life @100% DOD	≥2000 cycles		After Normal charge, discharge @0.33C current to the end of discharge voltage. Repeat above process until discharge capacity reduce to 80% of initial value.	
Discharge temperature characteristic @0.2C	-20°C(6h)	≥60%	Capacity @specified temperature ----- Capacity @ 25°C	The percentage accord with criterion
	0°C(6h)	≥80%		
	25°C(4h)	≥100%		
	55°C(4h)	≥95%		
Capacity retention rate	Remaining capacity ≥96%		After normal charge, store the battery @25±5°C for 28 days, then discharge capacity @0.33C, the retention capacity accord with criterion.	
Comm	Bluetooth		None	
Heating	Low Temp Heating		None	

## CIRCUIT PROTECTION

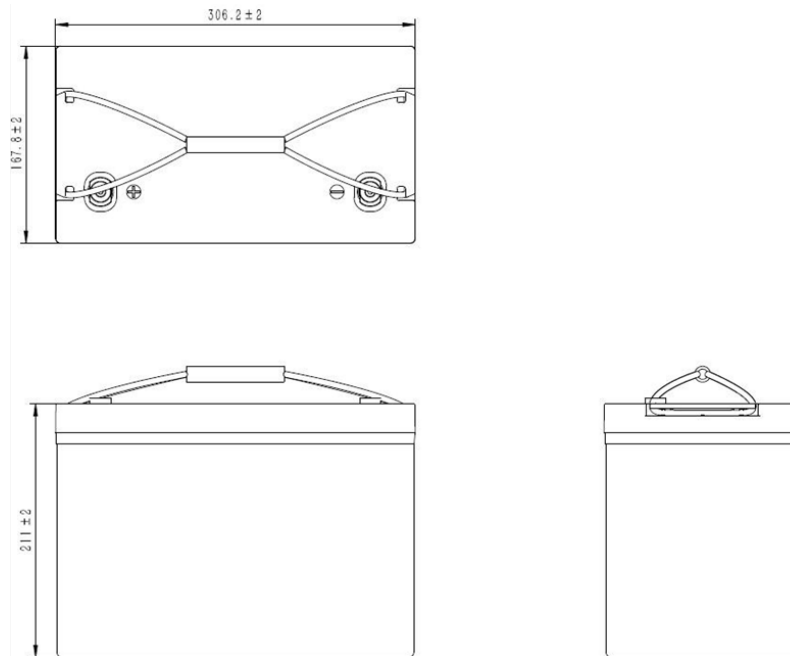
The batteries are built with a LiFePO4 Battery Management System (BMS) which can monitor and optimized each single prismatic cell during charge & discharge, to protect the battery pack overcharge, over discharge, short circuit. Overall, the BMS helps to ensure safe operation.

Items	Content	Criterion
Over charge	Over-charge protection for each cell	3.75±0.05V
	Over-charge release for each cell	3.60±0.05V
	Over-charge release method	Under the release voltage
Over discharge	Over-discharge protection for each cell	2.50±0.05V
	Over-discharge release for each cell	2.80±0.10V
	Over-discharge release method	Charging
Over current	Charge over current protection	100±5A, delay time 25±3s
	Charge over current release	Discharge or auto-release after 1min
	Discharge over current protection	L1:115±5A, Delay 25±3s L2:300±10A, Delay 3~4s
	Discharge over current release	Charge or auto-release after 1min
	Short circuit protection	Available
Temperature	Charge over temperature protection	Protect@65±3°C; Release@50±3°C
	Charge under temperature protection	Protect@-0±3°C; Release@4±3°C
	Discharge over temperature protection	Protect@65±3°C; Release@50±3°C
	Discharge under temperature protection	Protect@-20±3°C; Release@-15±3°C



## USER GUIDE

### Product Dimension



### Series / Parallel Operation

- \* Only use batteries of the same voltage and amp hour capacity from the same manufacturer and brand.
- \* Replace all the batteries at the same time.
- \* Replace all the batteries with 'new' ones (the same batch number or use by date).
- \* When batteries are put in parallel the continuous discharge amp rating and charge amp rating is typically reduced to 80% of the batteries' combined rating.
- \* Only wire 4 batteries maximum in parallel or in series.
- \* Batteries must be charged to 100% state of charge (SoC) level separately when connecting batteries and make sure the voltage difference of each battery  $\leq 0.1V$ .
- \* Connect your batteries one by one.

### Transport & Store

The battery need to do a full charge & discharge cycle every 6 months if out of use.  
No fall down, not stack over 6 layers, and keep upwards.

### Warning

Please read and follow the operation instructions before use. Improper operation may cause overheat, fire, rupture, damage or capacity deterioration of the battery. Describes is not responsible for any accidents caused by the action without following our instructions.

- \* Battery must be far away from heat source, high voltage, and no exposed in sunshine for long time.
- \* Never throw the battery into water or fire.
- \* Never reverse connect the positive and negative terminals when battery is in use.
- \* Never short connect the positive and negative terminals of the battery with metal.
- \* Never over impact , throw or trample the battery.
- \* Never disassemble the battery without manufacturer's permission and guidance.
- \* Never use mixed with other type of battery.

### Tips

- \* Keep the battery against high temperature. Otherwise it will cause battery heat, get into fire or lose some function and reduce the life.
- \* When battery run out of power, please charge your battery timely ( $\leq 15$ days).
- \* Please use the matched or suggested charger for this battery.
- \* If battery emit peculiar smell, heating, distortion or appear any abnormality, please stop using.
- \* If the battery leaks and get into the eyes or skin, do not wipe, instead, rinse it with clean water and look for medical help immediately.
- \* Please keep battery far away from children or pets.