Volthium

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12 V 50 Ah PLUS BATTERY USER MANUAL



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Before using your Volthium battery, please read the user manual and the datasheet specific to your battery.
You can find these documents by clicking on the following link: https://volthium.com/en/documents/
Any improper use of the product may void its warranty.
For any additional questions, please contact Volthium technical support.

1. General information

This specification defines the performance of rechargeable LiFePO4 battery pack R-B1250Amanufactured by Volthium Energy Inc., it describes the type, performance, technical characteristics, warning and caution of the battery pack.

2. Battery Pack Specification (@ 25±2 °C)

No.	Items		Parameters
2.1	Nominal voltage		12.8 V
2.2	Nominal energy @ 0.2 C		640 Wh
2.3	Nominal capacity @ 0.2 C		50.0 Ah
2.4	Internal resistance @ 1 khz AC		< 30.0 mohm
2.5	Charge voltage range		14.2 - 14.6 V
2.6	Float voltage		13.8 V
2.7	Allowed MAX charge current		50.0 A | @ 25 °C
2.8	Recommend charge current		30.0 A
2.9	Allowed MAX discharge current		50.0 A | @ 25 °C
2.10	Recommend discharge current		30.0 A
2.11	Peak/Surge current limit		500 A @ 3 S
2.12	Short circuit protection		660 A / 500 us
2.13	End of discharge		11 ~ 11.6 V
2.14	Communication	Bluetooth	Volthium
		Port	/

2.15	Parallel and Series connection		Support Max. 4 in series or 4 in parallel
2.16	Terminal and torque		M6
2.17	IP rating		IP66
2.18	Dimension		L 23.0±3.0 mm
			W 144.0±3.0 mm
			H 212.0±3.0 mm
2.19	Weight (without accessories)		6±0.5 kg
2.20	Operation temperature[1]	Charge	0 ~ 45 °C
		Discharge	-20 °C ~ 60 °C
2.21	Operation altitude		< 3000 m
2.22	Self-discharge rate[2]	Residual capacity	≤ 3 % / month | ≤ 15 % / year
		Recover capacity	≤ 1.5 % / Month | ≤ 8 % / year
2.23	Storage environment[3]	≤ 6 months	0 °C < T < 30 °C
		≤ 3 months	-10 °C < T < 45 °C
		Recommend environment	15 ~ 35 °C | 5 ~ 75 % RH
2.24	Cycle life		> 4000 cycles
2.25	Upgrade Features		OTA
Note	[1] Battery pack will stop work to protect itself when the temperature is out of the operation range. The optimum operating temperature range is from 15°C to 35°C, Frequent exposure to the harsh temperatures may worsen the performance of the battery pack and cycle life. [2] These conditions is based on battery pack is in sleep or power off mode. [3] For long time storage, we recommend charge the battery over 50% SOC and if the battery does not have a sleep or power off mode, please consult Volthium first.		

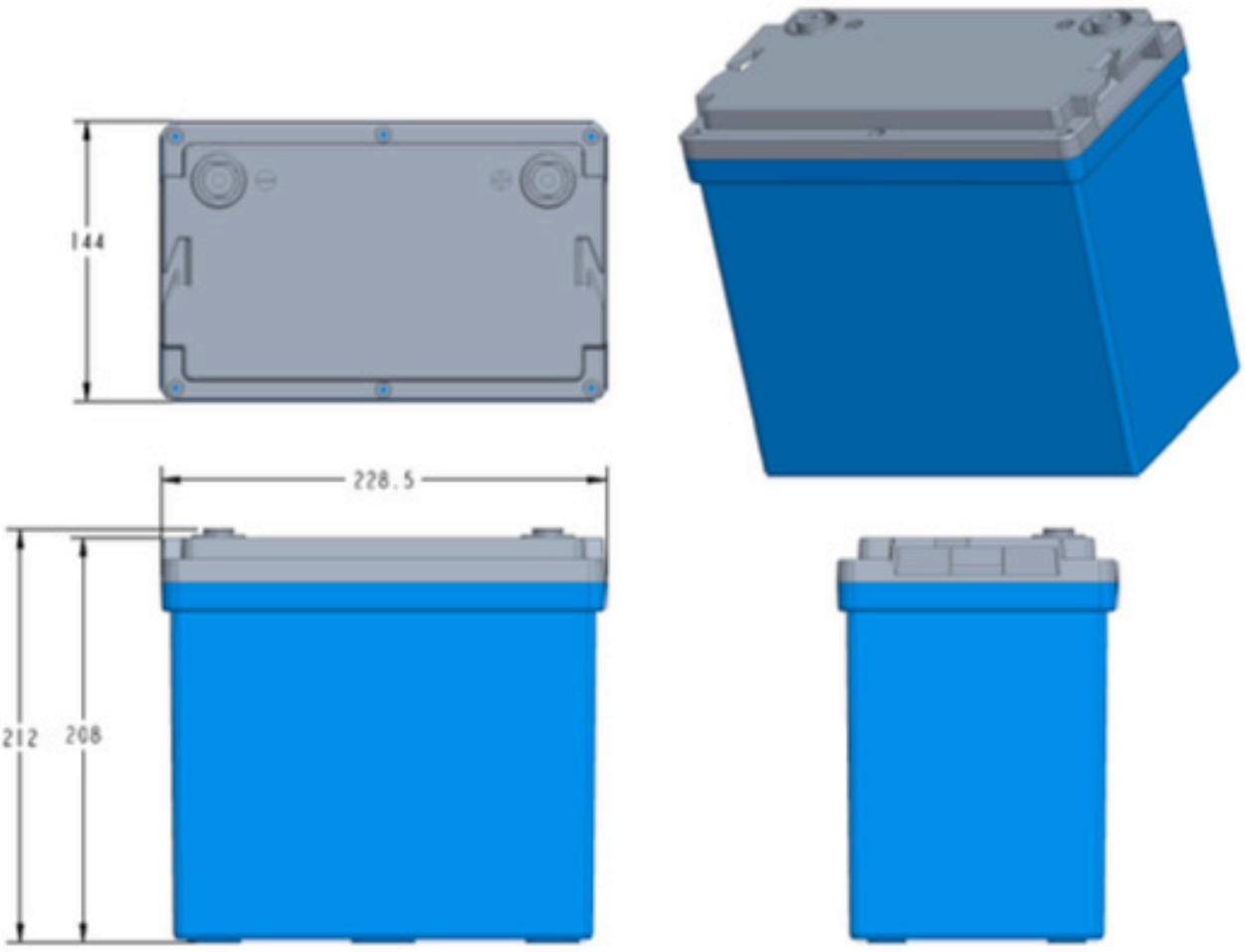
3. Electrical Specification

Test conditions: Ambient Temperature: 25±2 °C, Humidity: 10 % ~ 75 %.
Normal charge: Charge battery under CC (0.2 C) / CV (14.6 V) mode until over charge protection or the charge current reduce to 0.02 C, and then rest for 1 h.

No.	Items	Criterion	Test Condition
3.1	Rated Capacity	50.0 Ah	After Normal charge, discharge @ 0.2 C current to the end of discharge voltage.
	Min. capacity	48.5 Ah	
3.2	Internal Impedance	≤ 30.0 mΩ	@ 50 % SOC @ 1 kHz AC internal resistance test instrument.
3.3	Short circuit protection	Auto cutoff load when short circuit	Connect the positive and negative of this battery pack through a lead with 0.1 Ω resistance.
3.4	Cycle life	≥ 4000 cycles	After Normal charge, discharge @ 0.2 C current with 80 % DOD, Repeat above process until discharge capacity reduce to 80 % of initial value.
3.5	Communication	-20 °C (6 h) ≥ 60 %	$\frac{\text{Capacity @ specified temperature}}{\text{Capacity @ 25 °C}}$ The percentage accord with criterion
		0 °C (6 h) ≥ 80 %	
		25 °C (4 h) ≥ 100 %	
		55 °C (4 h) ≥ 95 %	
3.6	Capacity retention rate	Remain capacity ≥ 96 %	After normal charge, store the battery @ 25±2 °C for 28 days, then discharge capacity @ 0.2 C to the end of discharge voltage, the retention capacity accord with criterion.

4. Battery quick guide

4.1 Dimensions



Note: The appearance is subject to the actual product

4.2 Transport & Storage

- Do not violently shake, impact or squeeze, and prevent sun and rain during the transportation.
- Do light take and put and strictly prevent falling, rolling, and heavy pressure during loading and unloading.
- The battery should be placed in a dry, clean, dark, and well-ventilated indoor environment for long term storage, and the recommended storage temperature range is 15 ~ 35 °C.
- No harmful gases, flammable and explosive products and corrosive chemical substances in the storage location.
- The batteries should be stored and transported in close to 50 % SOC.
- If do not use for a long time, the battery needs to be charged every 6 months according to the specs.
- No fall down, no pile up over 6 layers, and keep face up.

4.3 Warning & Tips

Please read battery specification or manual carefully before use. Improper use may cause heat, fire, rupture, damage or capacity deterioration of the battery. Volthium Energy Inc. will not be responsible for any accidents caused by the usage without following our handling instructions.

Warning

- Battery must be far away from heat source, high voltage, and direct exposed to sunshine.
- Never throw the battery into water or fire.
- Never reverse two terminals when using the battery.
- Never connect the positive and negative of battery with conductor.
- Never knock, throw or trample the battery.
- Never disassemble the battery without manufacturer's permission and guidance.
- Never mixed battery with different capacity and brand.

Tips

- It is suggested to fully charged the battery per month to correct the battery SOC.
- Please charge your battery timely (≤2 days) when battery runs out of power.
- Please use the dedicated lithium battery charger to charge the battery.
- Stop using when battery emit peculiar smell, heating, distortion or appear any abnormity.
- Please keep the battery far away from children or pets.
- If the battery pack leaks electrolyte, avoid contacting with the liquid or gas leakage if the electrolyte of battery pack leaks, please take these steps immediately:
- **Gas Inhalation:** Evacuate the people in the contaminated area and seek medical aid as soon as possible.
- **Eye Contact:** Flush your eye with clean and flowing water for 15 min, and seek medical aid as soon as possible.
- **Skin Contact:** Thoroughly rinse the exposed area with soap and water to be sure no chemical or soap is left on them, and seek medical aid as soon as possible.
- **Swallowing:** Try to induce vomiting, seeks medical aid as soon as possible immediately.
- **Fire:** Please use carbon dioxide fire extinguisher rather than liquid to put out fires.