

Multi-application - LiFePO4 Power

CE UE-12Li40BL

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LITHIUM IRON PHOSPHATE BATTERY



1. General Information

This specification defines the performance of rechargeable LiFePO4 battery pack **UE-12Li40BL** manufactured by MASTER BATTERY, S.L., describes the type, performance, technical characteristics, warning and caution of the battery pack. The battery pack support Bluetooth communication function. Through Android and IOS APP, can read the battery status and information. Especially due to the Android system's openness, different smart phone manufacturer will have their own different Bluetooth hardware version and customized feature Android systems. So the APP may not work well on some smart phones (with Android system) due to compatible issue. It is necessary for the customer to confirm whether the phone is compatible for the APP.

2. Specification

NO.	Items	Description
Normal Specification		
1	Nominal Voltage	12.8V
2	Normal Capacity	40Ah
3	Internal Resistance	$\leq 50\text{m}\Omega$
4	Series-Parallel application	non support
5	Communication function	Bluetooth
Standard Charge		
6	Charge operation temperature range	0~45°C
7	Normal charge voltage	14.6 \pm 0.1V
8	Recommended float charge voltage (for Standby use)	13.8 \pm 0.1V
9	Allowed MAX constant charge current	40A @Battery initial Temp 25 \pm 5°C
10	Recommended charge current	$\leq 20\text{A}$

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NO.	Items	Description
Standard Discharge		
11	Discharge operation temperature range	-20~60°C
12	Output Voltage Range	8.0~14.6V
13	Allowed MAX constant discharge current	40A @Battery initial Temp 25±5°C
14	Discharge peak current	50A/30min, 170A/3s
15	Discharge end voltage	2.0V for single cell
Mechanical Characteristics		
16	Dimension	Length: 196±2mm
		Width: 165±2mm
		Height: 175±2mm
17	Weight	Approx.: 6.0±0.5Kg
Storage		
18	Storage Temperature & Humidity Range	Short: within one month -20~35°C, 45~75% RH
		Long term: above one month -10~30°C, 45~75% RH
19	Self-discharge rate	Residual capacity ≤3% per month; ≤15% per year
		Reversible capacity ≤1.5% per month; ≤8% per year



3. Electrical Characteristics & Test Condition

Testing Conditions: Ambient Temperature: $25 \pm 5^\circ\text{C}$; Humidity: 45%~75%.

NO.	Items	Criterion		Condition
1	Min Capacity	$\geq 39.0\text{Ah}$		Rest for 1 hour after fully charged, then discharge with 0.33C current until the battery reaches the cutoff voltage, you can stop and define the Discharging current*time value (Ah) as battery capacity.
2	Cycle life (DOD%100)	≥ 2500 cycle		Charge / CC (0.33C)/CV (14.6V); End current: 0.05C; Rest time: 1h; Discharge / CC (0.5C); End voltage: 8.0V; Repeat above process until discharge capacity is no more than 80% of normal value. Accumulated times is defined as cycle life.
3	Discharge Temperature Characteristics	-20°C	$\geq 70\%$	At $25 \pm 5^\circ\text{C}$ discharge the battery with the current of 0.33C to the cut-off voltage. Store the battery at various temperatures for 2h and discharge the battery with 0.33C to the cut-off voltage. Record the ratio between discharging & charging capacity.
		0°C	$\geq 80\%$	
		25°C	100%	
		55°C	$\geq 95\%$	
4	Charge Retention ability	Remain capacity $\geq 90\%$		Charge the battery to full capacity and store it for 28 days, and then discharge it with 0.33C to the cut-off voltage.

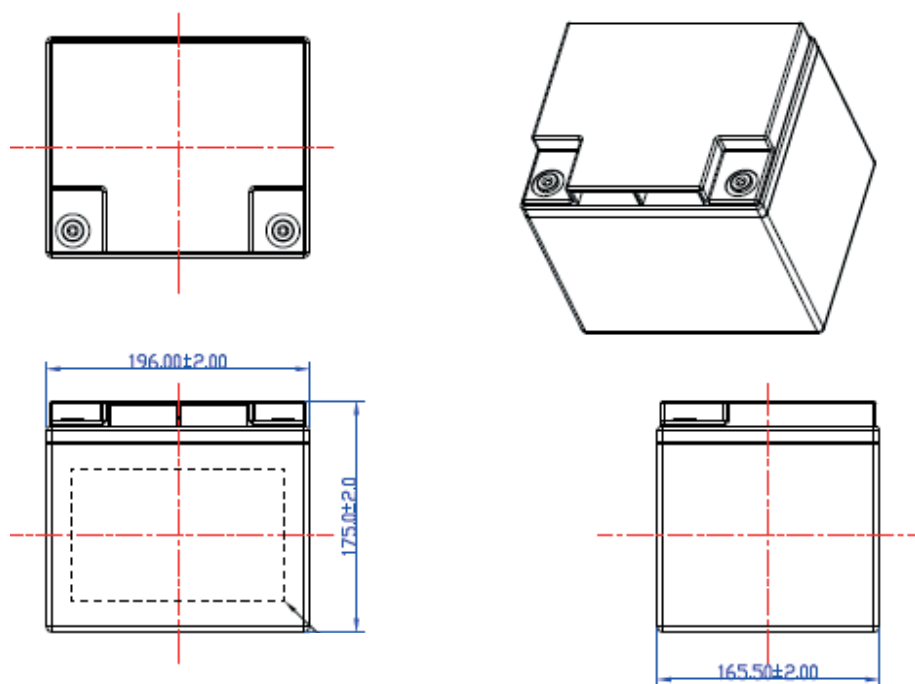


4. Circuit Protection

The batteries are supplied with a LiFePO₄ Battery Management System (BMS) that 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 and accurate running.

Test Item	Content	Criterion
Over charge	Over-charge protection for each cell	$3.80 \pm 0.03V$
	Over-charge release for each cell	$3.60 \pm 0.05V$
	Over-charge release method	Under the release voltage
Over discharge	Over-discharge protection for each cell	$2.00 \pm 0.05V$
	Over-discharge release for each cell	$2.30 \pm 0.05V$
	Over-discharge release method	Charging
Over current	Discharge over current protection	170~220A
	Protection delay time	10~40ms
	Over current release method	Release after cutoff the load
Over Temperature	Battery over temperature	Protection @ $65 \pm 5^{\circ}C$
		Release @ $50 \pm 5^{\circ}C$

5. Dimensional Drawing (Unit: mm)



6. Storage & Transportation

- Based on the character of cell, proper environment for transportation of LiFePO₄ battery pack need to be created to protect the battery.
- Battery should be stayed in the warehouse -20°C ~ 35°C where it's dry, clean, shade and well-ventilated.
- The battery should be stored in 50% SOC during transportation.
- The battery need to be charged every 6 months if out of use.
- Keep the battery against dropping, turning over and serious stacking during loading.

7. Warning & Tips

Please read and follow the specification or caution remarks on battery surface before use the battery. Improper use may cause heat, fire, rupture, damage or capacity deterioration of the battery. MASTER BATTERY, S.L. is not responsible for any accidents caused by the usage without following our specification.

- Never throw the battery into water or fire.
- Never connect the positive and negative of battery with metal.
- Never reverse two electrodes when use the battery.
- Never disassemble the battery without manufacturer's permission and guidance.
- Never knock, throw or trample the battery.
- The battery must be far away from heat source, high voltage, and avoid to be exposed in sunshine for long time, or lose some function and reduce the life..
- When battery run out of power, please charge your battery timely (≤ 15 day).
- Please use the matched or suggested charger for this battery.
- If battery emit peculiar smell, heating, distortion or appear any abnormality during working or storage, please stop using and take it out from device.
- If the battery leaks and get into the eyes or skin, do not wipe, instead, rinse it with clean water and see doctor immediately.
- Please be far away from children or pets.

