Enertec Batteries PTY Ltd.

SPECIFICATION
NAME: Li+AGE LITH100B
Lithium Iron Phosphate Battery

1. Overview

The specification applies to Li⁺AGE LITH100B LiFePO4 battery with Bluetooth communication designed and manufactured by Enertec Batteries PTY Ltd for universal deep cycle use on RV, motorhome, caravan, camping. The specification describes the battery mechanical, electrical characteristics and usage.

1.1 Battery Type

Lithium Iron Phosphate Battery (the "LiFePO4")

1.2 Design Criteria

Based on GB/T 18287-2013, UL1973-2013, IEC62619:2017

1.3 Battery Specification

LiFePO4 12.8V/100AH - 4S1P configuration

1.4 Cell Specification

LiFePO4 prismatic 36130220 3.2V 105AH. The cell is UL1642 listed.

1.5 Warranty

The warranty is effect from the date of shipping. The battery is warranted to be free from defects in workmanship and materials under normal use and service. (see P10 "Limited Warranty")

P/N	Free Replacement (months)	Repair (months)	Total Warranty (months)
LITH100B	36	24	60

2. Electrical Characteristics at 25℃

Item	Description		Characteristics	Criteria or Remark
1	Nominal Voltage		12.8V	3.2V/cell
2	Installed Capacity		105AH	UL1973-2013, IEC62619:2017
3	Nominal Capacity		105AH	UL1973-2013, IEC62619:2017
4	Min. Capacity		100AH	UL1973-2013, IEC62619:2017
5	Internal Resistance		≤15mΩ	Internal Resistance Testing Machine(1kHz)
6	Delivery Voltage		12.8V～13.6V	Multi-meter
7	Operation Temperature	Charge	0~50℃, 45~85%RH	Temperature & Humidity Instruments

		Discharge	-20~60℃, 45~85%RH	
8	Max. Continuous Charge Current		<100A	Recommend: 20A~50A
9	Max. Continuous Discharge Current		<120A (in 30 minutes)	Peak: 120A~150A<30s
10	Max. Reverse Charge Voltage		Not Allowed	Prohibition
11	External Short Circuit		Not Allowed	Prohibition
12	Max. Charge Voltage		14.6V±0.2V	3.65V/cell
13	Discharge Cut-off Voltage		11.2V	2.8V/cell
14	Life Cycle		>2,750 times @ 90% DOD	0.5C charge/ discharge at 25℃.
15	Series Connection		Max 4pcs (48V)	**IMPORTANT:** KEEP each battery is fully charged and voltage difference is <0.02V before this operation.
16	Parallel Connection		Max 4pcs	**IMPORTANT:** KEEP each battery is fully charged and voltage difference is <0.02V before this operation.
17	Bluetooth Communication		Apply to Android & iOS	BLE 4.0

3. Physical and Mechanical Specifications

Specification	Description
Dimensions	328mm X 177mm X 217.5mm, drop in Group 30H, 31
Net weight	11.9kg(26.2lbs)
Battery case material	PC + ABS UL94V-0
Threaded insert – 8mm stud	M8 size, Torque < 10N.m
Communication – LP12 socket	CAN Bus, CI-Bus, RS485 (optional)
Insulation	IP54 (splash and dust proof)

4. Battery Safety Test

4.1 Test Conditions

Temperature: 20±5℃

Relative Humidity(RH): 45% ~75%

Atmosphere Pressure: 86kPa ~106kPa

All tests are based on UL1973-2013 and IEC62619:2017.

4.2 Tests

Item	Description	Non-compliant	Test Result
1	Overcharge Test	E, F, C, V, S, L, R, P	Pass
2	Short Circuit Test	E, F, C, V, S, L, R, P	Pass
3	Overdischarge Protection Test	E, F, C, V, S, L, R, P	Pass
4	Imbalanced Charging Test	E, F, C, V, S, L, R, P	Pass
5	Failure of Cooling/Thermal Stability System	E, F, C, V, S, L, R, P	Pass
6	Vibration Test (LER Applications)	E, F, C, V, S, L, R, P	Pass
7	Impact Test	E, F, C, V, S, L, R, P	Pass
8	Drop Impact Test	E, F, C, S, L, R, P	Pass
9	Static Force Test	E, F, C, V, S, L, R, P	Pass
10	Thermal Cycling Test	E, F, C, V, S, L, R, P	Pass
11	Resistance to Moisture Test	E, F, C, V, S, L, R, P	Pass
12	Salt Fog Test	E, F, C, V, S, L, R, P	Pass
13	Internal Fire Exposure Test	E, F	Pass

Non-compliant Results Key:

E - Explosion

F - Fire

C – Combustible vapor concentrations

V – Toxic vapor release (in buildings or LER passenger compartment)

S – Electric shock hazard (electric breakdown)

L – Leakage (external to enclosure of DUT)

R - Rupture

P – Loss of protection controls

5. Battery Management System (the “BMS”)

Item	Contents	Criteria
Overcharge protection	Overcharge detects voltage	3.85 ± 0.025V
	Overcharge release voltage	3.40 ± 0.025V
	Delay time	2s
Over discharge protection	Over discharge detects voltage	2.80 ± 0.02V
	Over discharge release voltage	3.0 ± 0.02V
	Delay time	1-2s
Current	Continuous charge	<100A
	Continuous discharge	<120A (in 30 minutes)
Over current protection	Discharge over current protection	120 ± 2A
	Discharge over current delay	10s
	Charge over current protection	>100A
	Charge over current delay	2s
Short circuit protection	Short circuit detects voltage	0.4V
	Short circuit release condition	Cut load
Temperature protection	Charge high temperature protection	50℃
	Discharge high temperature protection	60℃
Communication	Communication mode	Bluetooth
	Communication protocol	BLE 4.0
Internal resistance	Main loop work condition	R_{DS}≤10mΩ
Balance charge	Open at 3.45V/cell	Current<100mA
Power consumption	Static	≤100uA

6. Battery Drawing

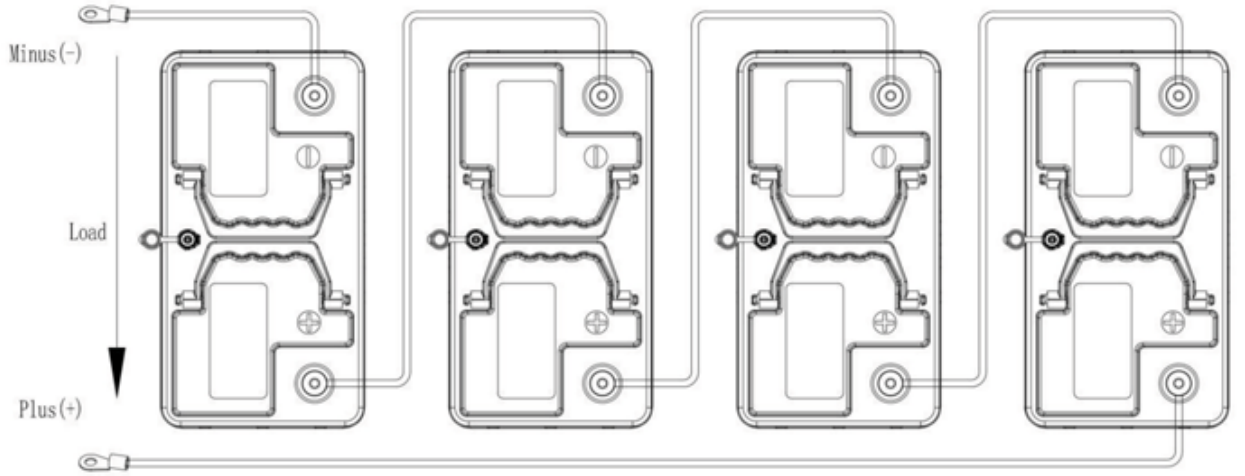
7. Battery Bank Application

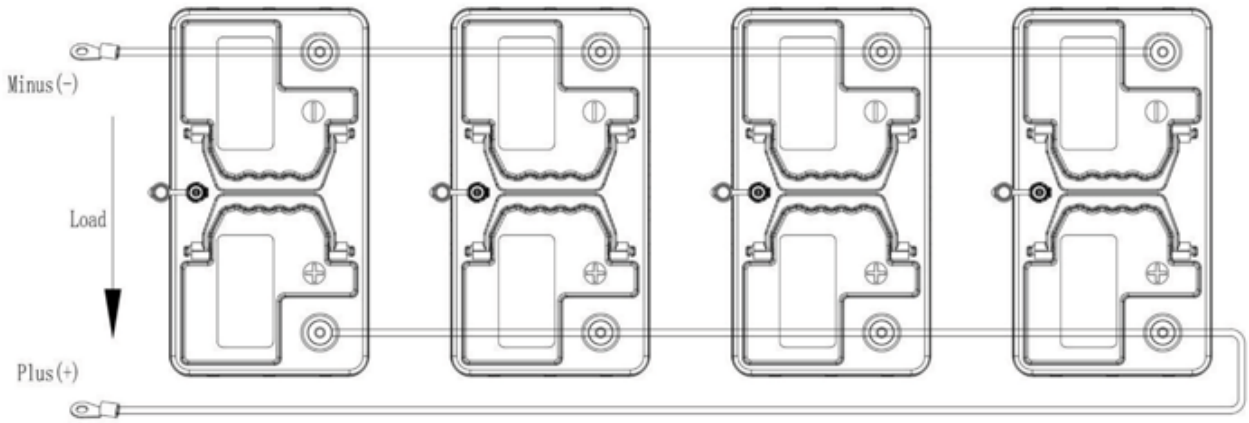
The Li⁺AGE LITH100B can be connected up in series or parallel when needed but only in the below configurations:

Item	1S(12V)	2S(24V)	3S(36V)	4S(48V)
1P	YES	YES	YES	YES
2P	YES	YES	YES	YES
3P	YES	YES	**NO**	**NO**
4P	YES	YES	**NO**	**NO**

Remark: S - series, P - parallel

NOTE – do not mix use new Li⁺AGE batteries with old batteries, whether in series or parallel.
(See owner's manual Appendix I)





8. Charging Instructions

When charging Li⁺AGE LITH100B make sure that you are not using a charger meant for other Lithium ion chemistries, which are typically set to a higher voltage than required by LiFePO4 batteries. Most mains lead acid battery chargers can be used if the voltage setting are within the parameters of LiFePO4 batteries but some smart chargers might only charge up to 90%. If this is the case we recommend getting a LiFePO4 charger. However you will not cause any damage to the battery if using your old charger.

Check that your charger cables are insulated and free of breakage. Charger terminal connectors should be clean and properly mate with the battery terminals to ensure a good connection and optimum conductivity.

Diagram 1 - Charging with lead acid battery charger

Charger Category	Compatible	Recharge a low voltage Li⁺AGE LITH100B(>11.2V)	State of charge to Li⁺AGE LITH100B	Remark
Output 13.8V~14.8V lead acid battery charger	YES	YES*	90%~100%	Suit 12V(1S) Li⁺AGE LITH100B
Output 27.6V~29.6V lead acid battery charger	YES	YES*	90%~100%	Suit 24V(2S) Li⁺AGE LITH100B
Output 41.4V~44.4V lead acid battery charger	YES	YES*	90%~100%	Suit 36V(3S) Li⁺AGE LITH100B
Output 55.2V~59.2V lead acid battery charger	YES	YES*	90%~100%	Suit 48V(4S) Li⁺AGE LITH100B

*Li⁺AGE LITH100B will get into dormant mode once its voltage is <11.2V. Most of lead acid chargers can't recharge it then. Use suitable LiFePO4 charger to wake it up.

Diagram 2 – Charging with inverter or charge controller

Item	12V system	24V system	48V system
Bulk voltage (stage 1)	14V~14.8V	28V~29.6V	56V~59.2V
Absorption voltage (stage 2)	14V~14.8V	28V~29.6V	56V~59.2V
Float charge	13.3V~13.8V	26.6V~27.6V	53.2V~55.2V
Low voltage cut-off	11V~12V	22V~44V	44V~48V
High voltage cut-off	14.6V	29.2V	58.4V

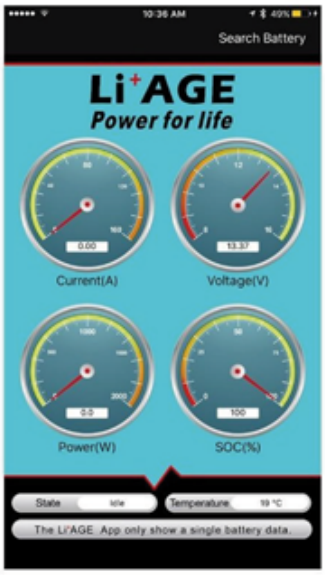
Remark: Li⁺AGE LITH100B will get into dormant mode once its voltage is <11.2V. Most of inverters or charge controllers can't recharge it then. Use suitable LiFePO4 charger to wake it up.

9. Accessing the Li+AGE App

The App is available for iOS and Android phones. Search the Apple App Store for LiAGE and download for free. If using an Android phone, search the Google Play for LiAGE and download for free too. The App will give you full visibility of your Li+AGE battery and its performance. Your phone connects to the Li+AGE App will via Bluetooth so you need to be within 10m of the battery to access the data. Each time you wish to view the data you will need to log on via the App but this is quick and easy.

App Icon

App Interface



10. Safety and Product Limitations

Keep out of the reach of children or pets.

Do not under any circumstances disassemble this battery.

Do not immerse the battery in liquid.

Do not use the battery with damaged cables or terminals.

This battery is not designed for cranking and starter applications.

Keep the battery charged at operating temperature range 0~50℃.

Keep the battery discharged at operating temperature range -20~60℃.

Do not expose the battery to fire or crush or puncture its casing.

Do not mix the batteries with other brands of batteries, whether in series or parallel.

11. Limited Warranty

Enertec Batteries PTY Ltd warrants this battery for 36 + 24 months from the date of shipping against defective materials or workmanship that may occur under normal use and care.

The manufacturer has no obligation under this Limited Warranty for Product subjected to the following conditions (including but not limited to):

※ Damage caused during shipping (exclude manufacturer's obligation) or mishandling of the Product.

※ Damage due to improper installation, loose terminal connections, under-sized cabling, incorrect connections on series and parallel, reverse polarity connections, and external short circuit.

※ Product has been disassembled, modified or tampered with.

※ Product that was used for applications other than which is was designed and intended for.

※ Product that was under-sized for the application.

※ Tampering or removal of manufacture date code.