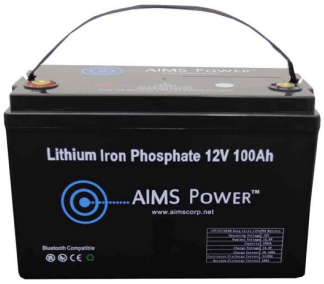


AIMS LFP12V50B LiFePO4 with Bluetooth Monitoring Instruction Manual

www.aimscorp.net

LiFePO4 Instruction Manual
LFP12V50B | LFP12V100B | LFP12V200B
50Ah | 100Ah | 200Ah

AIMS Power's 12 Volt LiFePO4 battery product line has a battery for every application. The LiFePO 4 batteries maintain a constant output voltage, providing more efficient power. This allows the cell to deliver virtually full power until it is discharged, and it can greatly simplify or even eliminate the need for voltage regulation circuitry. The battery has a much longer cycle life capacity and is easier to maintain compared to other battery technologies. The LiFePO 4 technology has better thermal and chemical stability, which improves battery safety, and is packed with power in a small and lightweight footprint. Easily uses the same space as your existing 12V battery and replaces lead-acid, AGM, or Gel battery applications in RVs, boats, commercial vehicles, off-grid backup power, and much more. Not intended to replace starting batteries. \

Contents

FEATURES

- The extremely high number of charge/discharge cycles
- > 10 Year lifespan with proper maintenance
- Bluetooth monitoring
- Wide operating temperature range

- Unsurpassed high-temperature performance
- Green energy without metal contaminant
- Low maintenance
- High amp capacity
- Stable output voltage
- Self recovering faults
- BMS safety protection
- Convenient removable carry handle
- Lightweight

SAFETY CHARACTERISTICS

- Short circuit protected
- Physical damage to battery case will not cause fire
- Excessive thermal exposure will not cause a fire
- Able to withstand over-charge/over-discharge without damaging the battery
- Battery Management System (BMS)

BMS FUNCTION

Circuit Protection: The battery includes a BMS (Battery Management System) to protect the battery from overcharging, over-discharging, over the drain, and short circuit, resulting in overall longer battery life. The BMS also protects the battery from exploding and catching fire. Includes thermal safety fusing, cell balancing, CID, and fault recovery. Bluetooth monitoring is available.

WARNINGS

 Lithium-ion cells and battery packs may get hot, explode or ignite and cause serious injury if exposed to extreme conditions. Be sure to follow the safety warnings listed below:

- Do not connect the positive terminal and negative terminal of the battery to each other with any metal object (such as wire)
- Only use approved LiFePO 4 battery chargers
- Do not carry a battery while wearing necklaces, rings, bracelets, hairpins or other metal objects
- Do not puncture, strike, or step on the battery
- Do not expose the battery to water or saltwater, or allow the battery to get wet
- Do not use LiFePO4 battery with any other types of batteries
- Do not use as starting battery of the vehicle
- Do not connect to an alternator or non-smart charging system
- Do not smoke around or near the battery
- Be careful not to drop heavy tools on the battery
- Keep away from children.

Do not place the battery in or near the fire, on stoves, or in other high-temperature locations. Do not place the battery in direct sunlight, or use/store the battery inside cars in hot weather. Doing so may cause the battery to

generate heat, explode or ignite. Using the battery in this manner may also result in a loss of performance and a shortened
life expectancy.
Do not disassemble or modify the battery. The battery contains safety and protection devices, which, if damaged, may cause the battery to generate heat, explode or ignite.
Immediately discontinue use of the battery if, while using, charging or storing the battery, the battery emits an unusual smell, feels hot, changes color or shape, or appears abnormal in any way. Contact AIMS Power if any of these situations occur.
Do not place the battery in a microwave oven, high-pressure container or on induction cookware.
Inspect the battery for any damage, cracks, corrosion on terminals. DO NOT USE if you find any damage to the battery.
Use good quality and proper size cables for your application.

Maximum Battery Wiring Recommendation

Voltage	Series	Parallel	# of Batteries	Max Discharge	Max Load Power
12V	0	4	4	800A	9.6kW
24V	2	4	8	800A	19.2kW
36V	3	4	12	800A	28.8kW
48V	4	4	16	800A	38.4kW

*The internal Battery Management System is complex and provides extra safety features. Note the max drain per battery specifications.

CHARGING

Only use battery chargers made for LiFePO4batteries. See battery specifications. Fire may occur if the correct battery charger is not used.
Ensure the battery cables are tight, secure, and have a good connection.
Follow instructions on the battery charger.
Use Smart Battery Charger rated for LiFePO4.

MAINTAINING THE BATTERY

The battery should be inspected often.
Ensure cables and terminals are kept clean and free from corrosion, dirt, or build-up of any kind. Use a dry cloth to clean.
When possible keep batteries at a moderate temperature.
Dispose of batteries properly. Must be recycled.
Store battery at 50% SOC.
Charge and discharge according to battery specifications.

INSTALLATION

Do not reverse the polarity! The battery has safety protections, but the damage may occur, and the warranty is voided.
Check battery voltage before use. Make sure the battery voltage matches that of the battery charger and load.
Properly size your battery cables for your application.
Battery cables must be crimped or preferably, soldered, and crimped. Soldered connections alone are not acceptable. High-quality, UL-listed battery cables are recommended.

The battery terminal must be clean to reduce the resistance between the DC terminal and cable connection.
Do not connect the positive terminal and negative terminal of the battery to each other with any metal object (such as wire).
Install in an environment with minimal heat. Warranty voided for terminal burnout due to excess heat and improper maintenance.
Install in any orientation.
Battery terminal torque – 7.7 – 7.7 Nm
Use proper fusing.
The terminal lugs are in a separate bag within the box.

COMPETITIVE INFORMATION

Comparing a 100Ah Batt ery	**GEL**	**AGE**	**Lead**	**LIFePO4**
Nominal Voltage	12V	12V	12V	12.8V
Charging Voltage	14	15.	15.	14.4-14.6
Life Cycles © 50% DOD	500-600 cycles	500-600 cycles	500-600 cycles	>4000 cycles- no D OD recommended
Constant Output Voltage	No	No	No	Yes
Operating Temperature	-4° F to 140° F	-4° F to 140° F	-4° F to 122° F	-4° F to 149° F
BMS	No	No	No	Yes
Mounting Orientation	Any	Any	Limited	Any
Peak Power	Varies	900A 5secs	Varies	200A lOsecs
Capacity	100A	100A	100A	100A
Watt-Hours	600 © 50% DOD	600 © 50% DOD	600 © 50% DOD	1280 © 100%DOD
Weight	71	74	69	31
Parallel Wiring	Yes	Yes	Yes	Yes
Series Wiring	Yes	Yes	Yes	Yes
Recommended DOD	50%	50%	50%	Not applicable
Dimensions-approximate	13″ x 7″ x 9″	13″ x 9″ x 7″	13″ x 7″ x 9″	13″ x 6.7″ x 9″

BATTERY SPECIFICATIONS – Lithium Iron Phosphate

Electrical Specifications	LFP12V50B	LFP12V1008	LFP12V200B
Nominal Voltage	12.8V	12.8V	12.8V
Nominal Capacity (at .5C, 77°F)	50Ah	100Ah	200Ah
Minimum Capacity (at .5C, 77°F)	47.5Ah	95Ah	190Ah
Expected Cycle Life	>4000 cycles w/1C charge and discharge rate, at 77°F, 80% DOD		
Operating Specifications			
Charge Method	Smart charger, constant current, constant voltage		
Charge Voltage Range (Max 14.6V)	14.4 -14.6V		
Continuous Charge Current	50A Max	100A Max	200A Max
Charge Temperature	32° F to 113° F		
Continuous Discharge Current	50A Max	100A Max	200A Max
Peak Instant Discharge Current (10 s ecs)	100A	200A	400A
Over Voltage Shutdown	15.2 +/-.5V		
Discharge Cut-off Voltage	8V =1- .5V		
Operating/Discharge Temperature	-4° F to 149° F (200 amp has low temp disconnect protection)		
Storage Temperature	-4° F to 113° F		
Self-Discharge (stored at 50% SOC)		< 3%/month	
Watt-Hours	600 Watt-hours	1280 Watt-hours	2560 Watt-hours
Physical Specifications			
Battery Dimensions	9″L x 5.4″W x 8.2″H-9-with terminals	12.75″L x 6.5″W x 8.3″H-9″ with terminals	20.5″L x 10.6″W x 8.7″H-9″ with terminals
Weight	15.8 lb	27.5 lb	62 lb
Shipping Weight	18 lb	31 lb	66 lb
Group Size	1250	31	4D
Post to Post Measurement Battery Post Size	7″	10.43″	5″
	5/16″ M8 1.3″ long	5/16″ M8 1.9′ long	5/16″ M8 1.7″ long

BMS Operation

Over Charge Protection	Overcharge detection voltage: 3.8 +/- .05V		
	Overcharge detection delay time: 0.96 – 1.4s		
	Overcharge release voltage: 3.60 +/-.05V		
	Maximum charge voltage: 3.65 +/-.05V		
Over-Discharge Protection	Over-discharge detection voltage: 2.0V +/- .05V		
	Over-discharge detection delay time: 0.96-1.4s		
	Over-discharge release voltage: 2.3V +/- .10V		
Over Current Protection	Over-current detection delay time: 9 +/- 2s		
	Overcurrent release condition: Cut load		
Short Circuit Protection	Yes		
Warranty (Limited)	10 Year	I 10 Year	I 10 Year

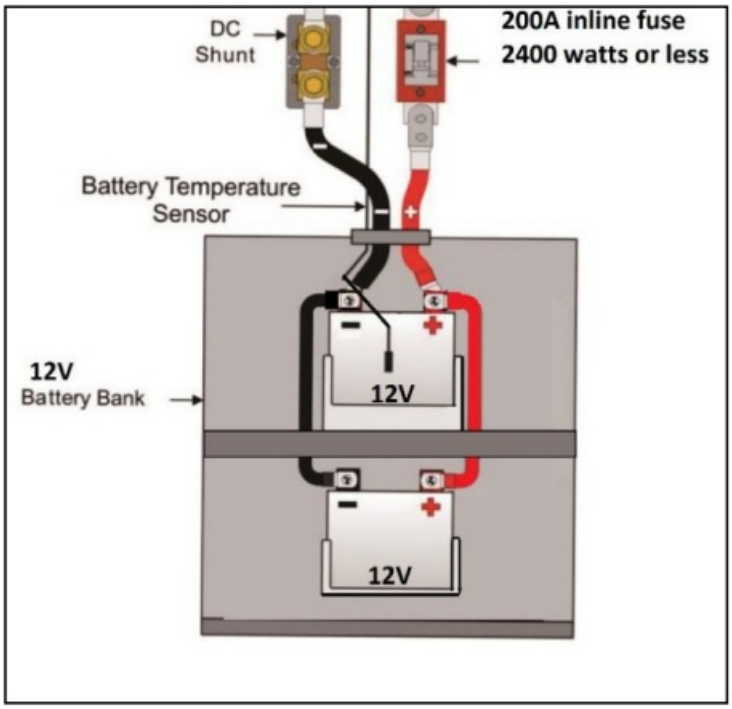
CELL SPECIFICATIONS

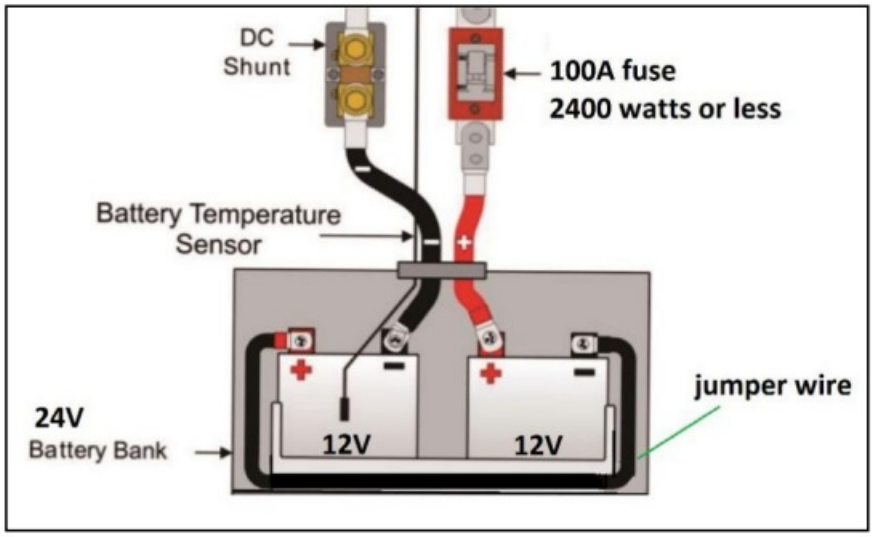
Model	**32700**
Standard Capacity	6AH
Rated Voltage	3.2V
Max Charge Voltage	3.65V
Discharge Cut-off Voltage	2.3V
Standard Charge Current	5A
Max Continuous Discharge Current	15A
Peak Instant Discharge Current	30A (10 Secs)
Dimension (Customized)	32*70mm
Weight (Approx.)	About 160g
Operating Temperature	-4°F–149°F
Built-in Protection Circuit Module	YES
Cycle Time	4000 times at 1C, 70% DOD
32700 3.2V 6000mAh	Diameter: 32.2mm Height: 70mm

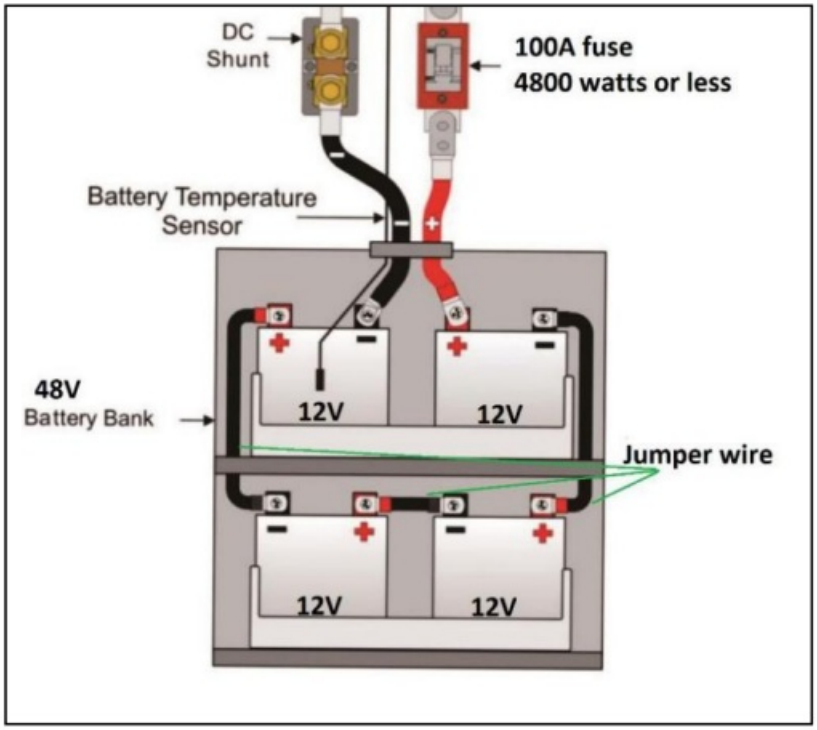
Celsius	Fahrenheit	Usable Capacity
60	140	Usable but not recommended
50	122	≥102%
40	104	≥100%
30	86	≥100%
20	68	≥97%
10	50	≥90%
0	32	≥85%
-10	14	≥80%
-20	-4	≥65% for 50&100AH, ≥67% for 200AH

DC WIRING DIAGRAM

DC Shunt and inline fuse optional


DC
Shunt
200A inline fuse
2400 watts or less
Battery Temperature
Sensor
12V
Battery Bank
12V
12V


DC
Shunt
100A fuse
2400 watts or less
Battery Temperature
Sensor
jumper wire
24V
Battery Bank
12V
12V


DC
Shunt
100A fuse
4800 watts or less
Battery Temperature
Sensor
48V
Battery Bank
12V
12V
Jumper wire
12V
12V

BLUETOOTH INSTRUCTIONS

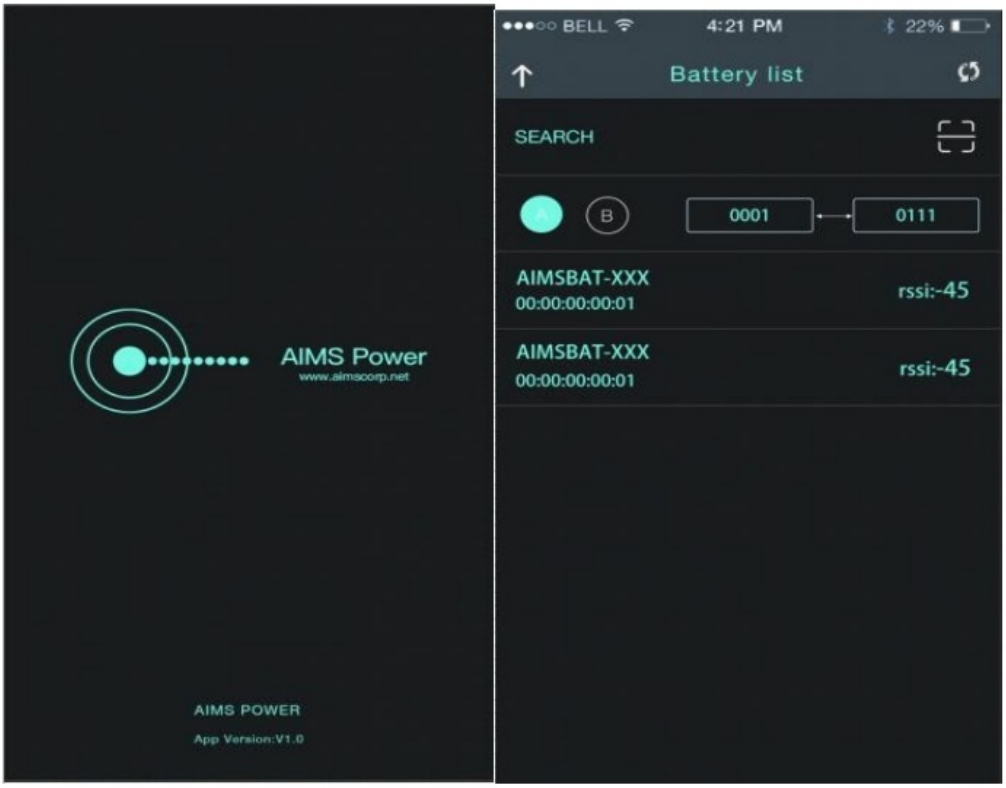
By downloading the Android™ or Apple® app on your smartphone or tablet, you can monitor the following information:

- Battery Voltage
- Battery Current (Amps)
- Battery Charge Status(SOC)
- Charge/Discharge State
- Battery Cycles
- Battery Temperature
- Remaining Capacity (RMC)
- Design Capacity (DCAP)
- Full Charge Capacity (FCC)
- Average Time: Empty/Full

CONNECTION TO THE BATTERY

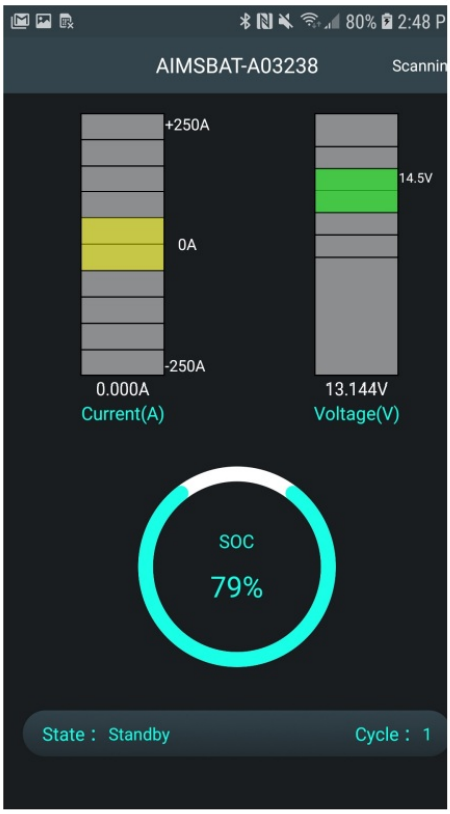
Make sure you have the latest version of the AIMSBATB app that can be found on Google Play for Android and the App Store for Apple (IOS). Turn on your Bluetooth. Tap the AIMSBATB icon to open the app. It will search for all AIMS' smart batteries within range of your Bluetooth device and a list of batteries will appear. If your batteries are not listed, move closer to the battery location and swipe your finger from top to bottom on the APP. This will refresh the screen. Once the battery list is displayed, tap the battery for more information. You can also search the battery's serial number if your battery bank has several batteries. The serial number is located on the battery. Note: The app can only communicate with one battery at a time. You must disconnect from one battery to connect to another one (go back to the battery list screen). Also, if any device (such as cell phone or tablet) is connected to a battery, no other device can connect to that battery until the first device disconnects.

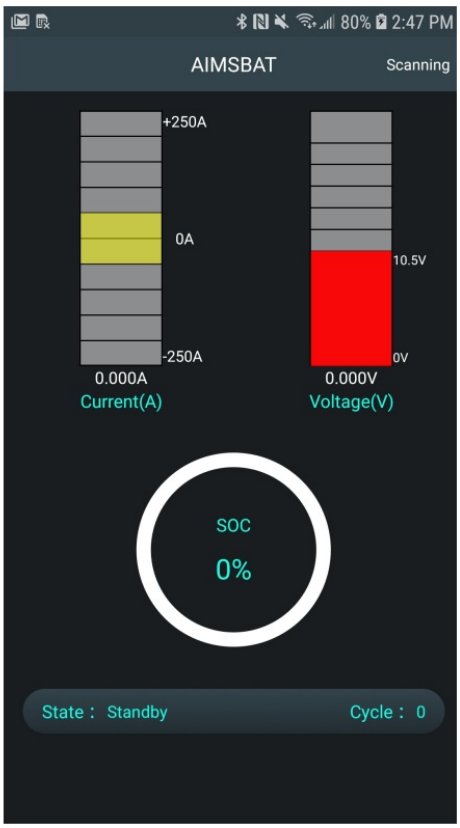
NOTE: Screens and data displayed in this manual may change as we continue to make updates to the app as needed.



BASIC INFORMATION

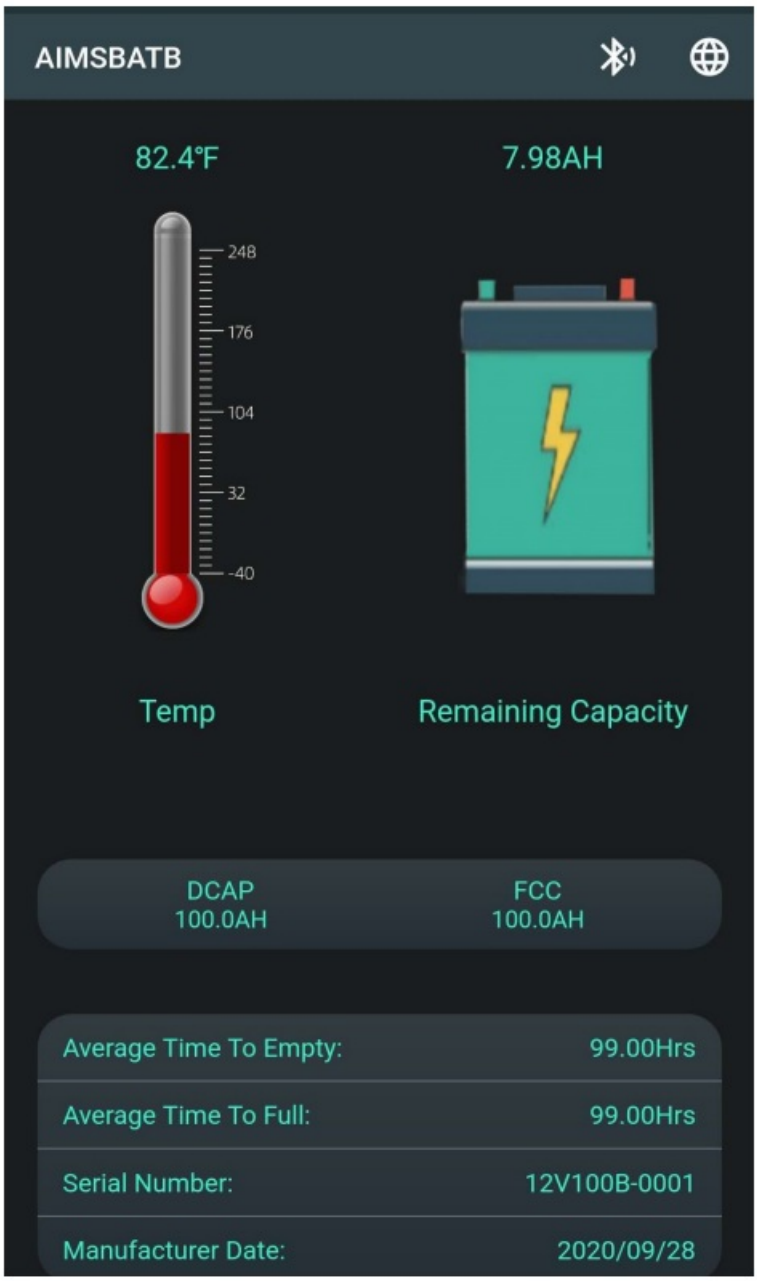
The second screen displays basic information such as, real-time current and voltage. The State of Charge (SOC) circular graph, like a fuel gauge, displays the percentage of the remaining charge in the battery. At the bottom of the screen, you will find the battery state and number of charge cycles.





DETAILED INFORMATION

The next screens display more detailed information. The thermometer shows the current temperature. The battery image displays RMC (Remaining Capacity). You will also find DCAP (Design Capacity), FCC (Full Charge Capacity), Average Time to Empty (ATTE), and Average Time to Full (ATTF), serial #, and date.



WARRANTY

AIMS Power warrants this battery is free from manufacturing defects for 10 years. If for some improbable circumstance the battery is defective, AIMS will replace the battery with a pre-authorized return number, and return instructions will be provided, per the US Department of Transportation regulations for lithium battery shipments. AIMS Power does not warrant batteries that have been poorly maintained, charged incorrectly, reversed polarity, improperly installed, stored and used in excessive heat, physical damage, fire, freeze, water damage, tampered, damage to terminals, failing to keep the correct charge to the battery or use that exceeds rated charge/discharge cycles. DO NOT RETURN THE BATTERY WITHOUT RMA. IT WILL BE REFUSED. AIMS Power has a team of technicians to provide technical support when needed. Proof of purchase will be requested. The customer is responsible for shipping fees to AIMS Power. If AIMS Power deems the product defective, AIMS Power will cover the replacement shipping fees. We are unable to accept returns because of the strict certifications and handling required to ship and handle lithium batteries.

Contact information for AIMS Power:

Returns Department
9550 Gateway Drive
Reno, NV 89521
775-359-6703
returns@aimscorp.net
www.aimscorp.net

Documents / Resources

	**AIMS LFP12V50B LiFePO4 with Bluetooth Monitoring** [pdf] Instruction Manual LFP12V50B, LFP12V100B, LFP12V200B, LiFePO4, Bluetooth Monitoring, LiFePO4 with Bluetooth Monitoring

References

- **Power Inverters, DC To AC Inverters & Solar Panels | AIMS Power**