



# LITHIUM IRON PHOSPHATE BATTERY

## FEATURES

Lithium Iron Phosphate (LiFePO<sub>4</sub>): the Safest Lithium Technology.  
 Integrated Battery Management System(BMS).  
 Bluetooth/RS485/RS232/SMBus/CANBus (Optional).  
 SOC LED/LCD Indicator(Optional).

## PERFORMANCE

Long Cycle Life>2000cycles @100% DOD.  
 High Density, High Discharge Current, High Temperature Range. Low Weight, Free Maintenance.  
 Fast Charging.  
 Environment Friendly.



## MIL12-1,28 (12.8V 100Ah)

### Electrical Parameters

Nominal Voltage	12.8V
Rated Capacity	100Ah
Energy	1280Wh
Resistance	≤30m Ω
Efficiency	99%
Cycle Life	>2000cycles @0.5C,100% DOD
Self Discharge	2% per Month
Max. Modules in Series/Parallel	4S/20P

### Discharge Parameters

Continuous Discharge Current	100A
Pulse Discharge Current	100A( 3 seconds)
Recommended Volt. Disconnect	10V
BMS Discharge Cut-off Voltage	8V
Reconnect Voltage	9.2V
Short Circuit Protection	200~600 μs

### Compliance Certificate

Certifications	UL2054(MH63377)
	CE
	IEC62133 & CB
	KC
	BIS
Shipping Classification	UN3480, Class 9,UN38.3

### Mechanical Parameters

Dimension(L x W x H)	330x 173x 212 mm 13.00 x 6.81 x 8.35"
Weight	13.6kg(29.92lbs)
Terminal Type	M8
Battery Housing	ABS, UL-94 V-0
Housing Protection	IP56
Cell Type-Chemistry	LiFePO <sub>4</sub> Cylindrical Cell
SOC Display(Optional)	LED/LCD Indicator

### Charge Parameters

Charge Method	CC-CV
Charge Voltage	14.4~14.8V
Recommended Float Voltage	13.8V
Recommended Charge Current	50A
Maximum Charge Current	100A
BMS Charge Cut-off Voltage	15.6V

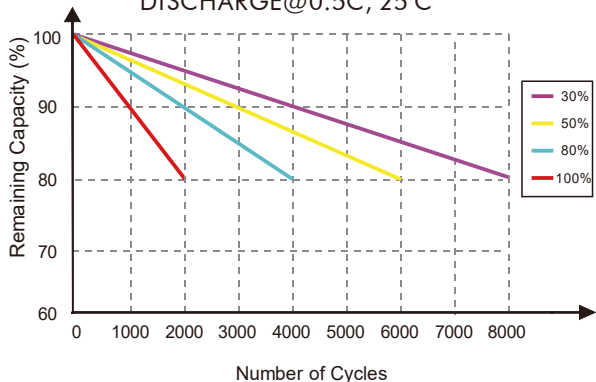
### Temperature Parameters

Discharge Temperature	-30 to 60°C (-22 to 140°F)
Charge Temperature	0 to 45°C (32 to 113°F)
Storage Temperature	-40 to 60°C(-40 to 140°F)
BMS High Temperature Cut-off	80°C(176°F)

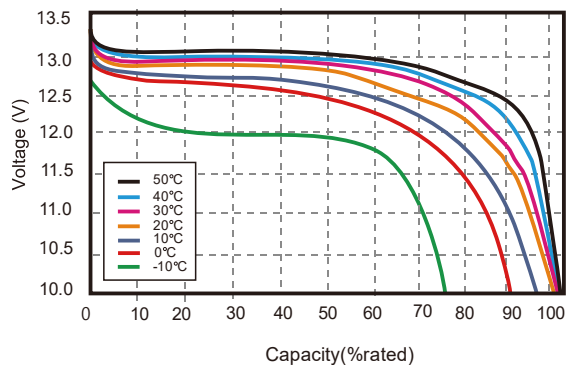


## Performance Characteristics

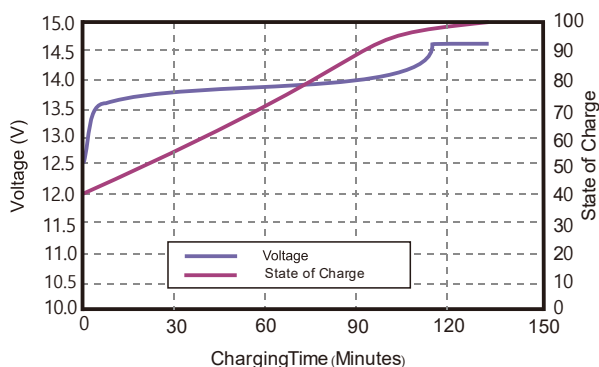
CYCLE LIFE vs. DEPTH OF DISCHARGE(DOD)  
DISCHARGE@0.5C, 25°C



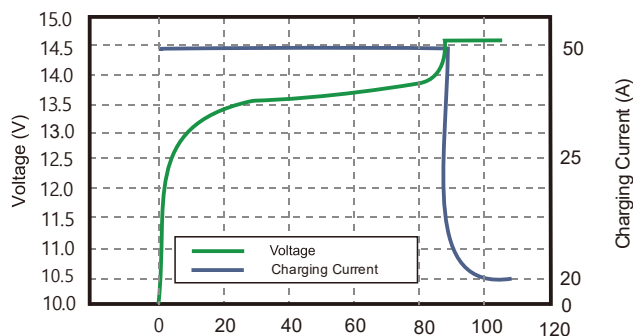
DISCHARGE CAPACITY at VARIOUS TEMPERATURES  
DISCHARGE @0.5C, 25°C



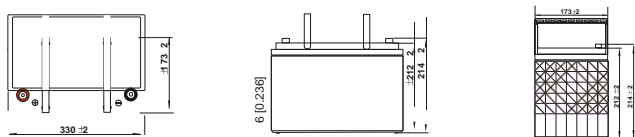
STATE OF CHARGE CURVE @0.5C, 25°C



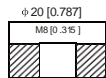
CHARGING CHARACTERISTICS @0.5C, 25°C



## Battery Dimensions



M8 - 1.0x 8mm  
Terminal



## Battery Recycle



**NOTE:** Do Not Mix With Sealed Lead Acid Batteries When Recycling.  
See User's Manual for Proper Operation.

## Battery Applications

- + Data Center UPS
- + Telecom Backup Power
- + Military Power Supply
- + Solar Energy Storage System
- + Solar Street LED Lightings
- + Autonomously Guided Vehicles (AGVs)
- + Industrial Robotics & Handling Equipment
- + Aerial Work Platform
- + Floor Cleaning Machines
- + Power Tools, Lawn Mower
- + Electric Bike & Motorcycles
- + Electric Mobilities( E-scooters, Wheelchair)
- + Golf Trolley & Golf Carts
- + Medical Devices
- + Electric Ships
- + Passenger Vehicles

# BLACKBULL

## LITHIUM IRON PHOSPHATE BATTERY

### FEATURES

Lithium Iron Phosphate (LiFePO4): the Safest Lithium Technology.  
 Integrated Battery Management System(BMS).  
 Bluetooth/RS485/RS232/SMBus/CANBus (Optional).  
 SOC LED/LCD Indicator(Optional).

### PERFORMANCE

Long Cycle Life >2000cycles @100% DOD.  
 High Density, High Discharge Current, High Temperature Range. Low Weight, Free Maintenance.  
 Fast Charging.  
 Environment Friendly.



### MIL12.8-1,92 (12.8V 150Ah)

#### Electrical Parameters

Nominal Voltage	12.8V
Rated Capacity	150Ah
Energy	1920Wh
Resistance	≤30m Ω
Efficiency	99%
Cycle Life	>2000cycles @0.5C, 100% DOD
Self Discharge	2% per Month
Max. Modules in Series/Parallel	4S/20P

#### Discharge Parameters

Continuous Discharge Current	100A
Pulse Discharge Current	150A( 3 seconds)
Recommended Volt. Disconnect	10V
BMS Discharge Cut-off Voltage	8V
Reconnect Voltage	9.2V
Short Circuit Protection	200~600 μs

#### Compliance Certificate

Certifications	UL1642(Cell)
	CE
	IEC62133 & CB
	KC
Shipping Classification	BIS
	UN3480, Class 9, UN38.3

#### Mechanical Parameters

Dimension(L x W x H)	483x 170x 238 mm
	19.02 x 6.69 x 9.37"
Weight	16.5kg(36.38lbs)
Terminal Type	M8
Battery Housing	ABS, UL-94 V-0
Housing Protection	IP56
Cell Type-Chemistry	LiFePO4 Cylindrical Cell
SOC Display(Optional)	LED/LCD Indicator

#### Charge Parameters

Charge Method	CC-CV
Charge Voltage	14.4~14.8V
Recommended Float Voltage	13.8V
Recommended Charge Current	75A
Maximum Charge Current	150A
BMS Charge Cut-off Voltage	15.6V

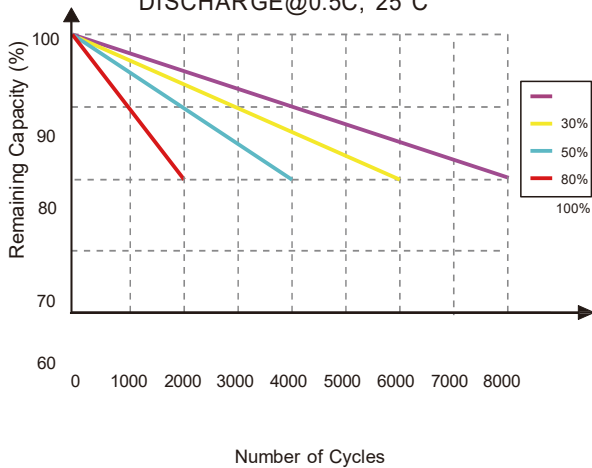
#### Temperature Parameters

Discharge Temperature	-30 to 60°C (-22 to 140°F)
Charge Temperature	0 to 45°C (32 to 113°F)
Storage Temperature	-40 to 60°C (-40 to 140°F)
BMS High Temperature Cut-off	80°C(176°F)

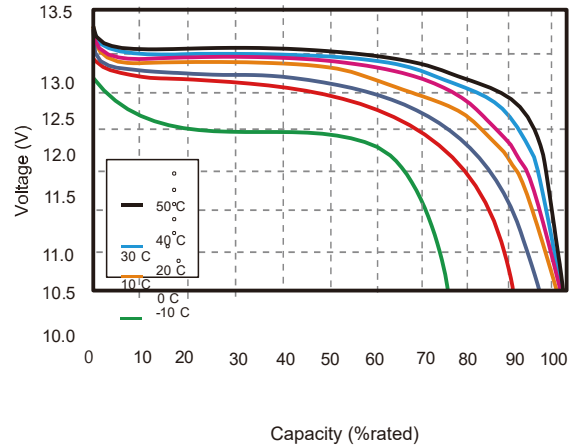


## Performance Characteristics

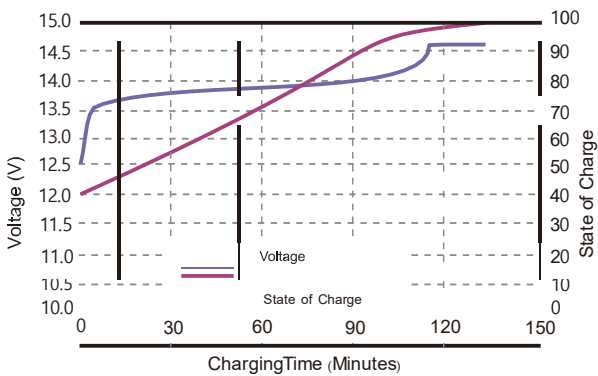
CYCLE LIFE vs. DEPTH OF DISCHARGE (DOD)  
DISCHARGE @ 0.5C, 25 °C



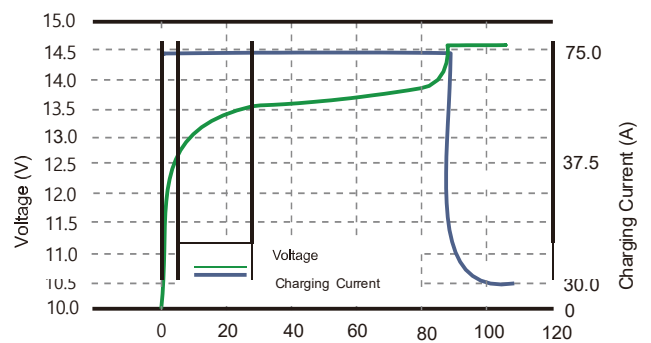
DISCHARGE CAPACITY at VARIOUS TEMPERATURES  
DISCHARGE @ 0.5C, 25°C



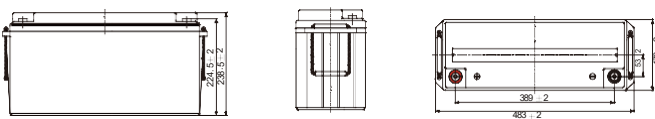
STATE OF CHARGE CURVE @ 0.5C, 25 °C



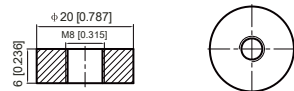
CHARGING CHARACTERISTICS @ 0.5C, 25 °C



## Battery Dimension



M8 - 1.0x 8mm  
Terminal



## Battery Recycle



**NOTE:** Do Not Mix With Sealed Lead Acid Batteries When Recycling.  
See Blackbull User's Manual for Proper Operation.

## Battery Applications

- + Data Center UPS
- + Telecom Backup Power
- + Military Power Supply
- + Solar Energy Storage System
- + Solar Street LED Lightings
- + Autonomously Guided Vehicles (AGVs)
- + Industrial Robotics & Handling Equipment
- + Aerial Work Platform
- + Floor Cleaning Machines
- + Power Tools, Lawn Mower
- + Electric Bike & Motorcycles
- + Electric Mobilities (E-scooters, Wheelchair)
- + Golf Trolley & Golf Carts
- + Medical Devices
- + Electric Ships
- + Passenger Vehicles



# LITHIUM IRON PHOSPHATE BATTERY

## FEATURES

Lithium Iron Phosphate (LiFePO4): the Safest Lithium Technology.  
Integrated Battery Management System(BMS).  
Bluetooth/RS485/RS232/SMBus/CANBus (Optional).  
SOCLED/LCD Indicator(Optional).

## PERFORMANCE

Long Cycle Life>2000cycles @100% DOD.  
High Density, High Discharge Current, High Temperature Range. Low Weight, Free Maintenance.  
Fast Charging.  
Environment Friendly.



## MIL24-1,28 (25.6V 50Ah)

### Electrical Parameters

Nominal Voltage	25.6V
Rated Capacity	50Ah
Energy	1280Wh
Resistance	≤30m Ω
Efficiency	99%
Cycle Life	>2000cycles @0.5C,100% DOD
Self Discharge	2% per Month
Max. Modules in Series/Parallel	2S/20P

### Discharge Parameters

Continuous Discharge Current	100A
Pulse Discharge Current	100A (>3 seconds)
Recommended Volt. Disconnect	20V
BMS Discharge Cut-off Voltage	16V
Reconnect Voltage	18.4V
Short Circuit Protection	200~600 us

### Compliance Certificate

Certifications	UL2054
	CE
	IEC62133 & CB
	KC
	BIS
Shipping Classification	UN3480, Class 9,UN38.3

### Mechanical Parameters

Dimension(L x W x H)	330x 173x 212 mm
	13 x 6.8 x 8.3"
Weight	13.6kg (29.92lbs)
Terminal Type	M8
Battery Housing	ABS, UL-94 V-0
HousingProtection	IP56
Cell Type-Chemistry	LiFePO4 Cylindrical Cell
SOC Display(Optional)	LED/LCD Indicator

### Charge Parameters

Charge Method	CC-CV
Charge Voltage	28.8~129.6V
Recommended Float Voltage	27.6V
Recommended Charge Current	25A
Maximum Charge Current	50A
BMS Charge Cut-off Voltage	31.2V

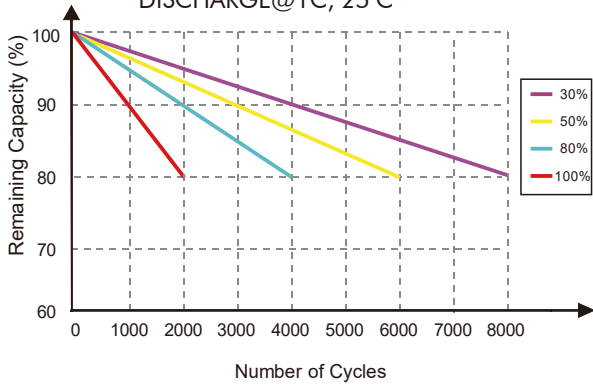
### Temperature Parameters

Discharge Temperature	-30 to 60°C (-22 to 140°F)
Charge Temperature	0 to 45°C (32 to 113°F)
Storage Temperature	-40 to 60°C (-40 to 140°F)
BMS High Temperature Cut-off	80°C (176°F)

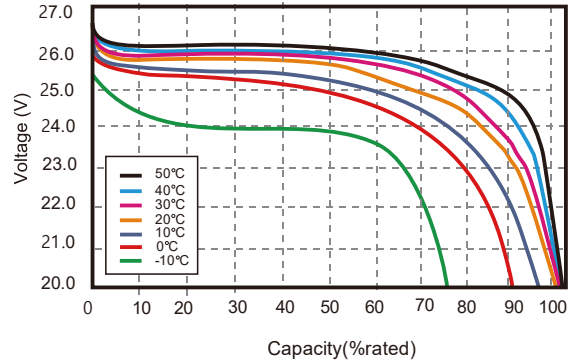


## Performance Characteristics

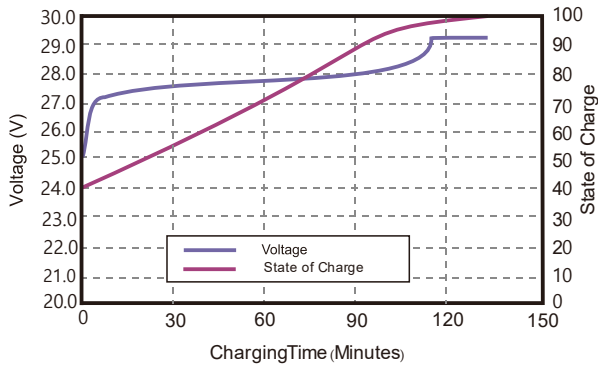
CYCLE LIFE vs. DEPTH OF DISCHARGE(DOD)  
DISCHARGE@1C, 25°C



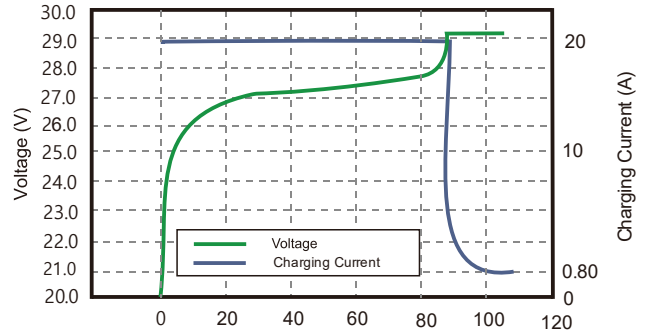
DISCHARGE CAPACITY at VARIOUS TEMPERATURES  
DISCHARGE @1C



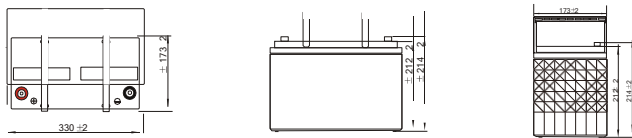
STATE OF CHARGE CURVE @0.5C, 25°C



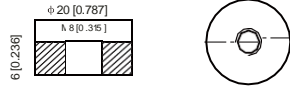
CHARGING CHARACTERISTICS @0.5C, 25°C



## Battery Dimension



M8 - 1.0x 8mm  
Threaded Hole



## Battery Recycle



## Battery Applications

- + Data Center UPS
- + Telecom Backup Power
- + Military Power Supply
- + Solar Energy Storage System
- + Solar Street LED Lightings
- + Autonomously Guided Vehicles (AGVs)
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- + Medical Devices
- + Electric Ships
- + Passenger Vehicles

**NOTE:** Do Not Mix With Sealed Lead Acid Batteries When Recycling.  
See User's Manual for Proper Operation.

	<b>MIL48-5,12 (51.2V 100Ah) LiFePO4 Battery Pack Specification</b>	
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# **LiFePO4 Battery Pack Specification**

**MIL48-5,12 (51.2V 100Ah)**

**BLACKBULL** 

**MIL48-5,12 (51.2V 100Ah)  
LiFePO4 Battery Pack  
Specification**

**CONTENTS**

1. Preface .....	3
2. Product and Model.....	3
3. Battery Pack Specifications .....	3
4. Standard Test Conditions.....	5
5. Characteristics .....	5
6.Characteristics Curve .....	6
7. Cautions.....	7



# MIL48-5,12 (51.2V 100Ah) LiFePO4 Battery Pack Specification

## 1. Preface

This specification describes the type and size, performance, technical characteristics, warning and caution of the MIL48-5,12 (51.2V 100Ah) LiFePO4 Rechargeable Battery Pack. The specification only applies to MIL48-5,12 (51.2V 100Ah) battery supplied by Blackbull.

## 2. Product and Model

2.1 Product: LiFePO4 Rechargeable Battery Pack

2.2 System Configuration:

- Battery pack: 26650-4000-3.2V-16S26P

Size: 600\*340\*230mm(±2mm)



Input	Positive	50A Anderson Connector
Input	Negative	50A Anderson Connector
Output	Positive	160A Reme Connector
Output	Negative	160A Reme Connector

**MIL48-5,12 (51.2V 100Ah)  
LiFePO4 Battery Pack  
Specification**

### 3. Battery Pack Specifications

Items	Standard	Comments
Nominal voltage	51.2V	16S
Typical capacity	100Ah	At 0.5C discharge rate
Max continuous discharge current	200A	
Discharge cut-off voltage	40V	
Charge input voltage	58.4V	Charge mode: CC/CV , Use a constant current, constant voltage(CC/CV)
Max.Charge Current	20A	
Operation temperature range	Charge	0°C ~ +45°C
	Discharge	-20°C ~ +60°C
		When the environment temperature is higher than 45°C , please pay attention to ventilation and heat rejection.
Storage temperature range	0°C ~ 40°C ( Capacity 80% )	Recommended long-term storage temperature is 15~25°C
Humidity	5%≤RH≤85%	
SoC	LED Display	
Cabinet Material	Metal Case	
Cabinet Protection Grade	IP65	
Total Weight	55kg±5kg	
Size ( L*W*H )	600*340*230mm(±2mm)	
Protection function	Over charge protection、 Over discharge protection、 Over current protection、 Temperature protection 、 Short circuit protection。	

**MIL48-5,12 (51.2V 100Ah)  
LiFePO4 Battery Pack  
Specification**

## 4. Standard Test Conditions

All test in this specification should be in standard atmospheric conditions: temperature:

25± 5°C, relative humidity: 65±20%.

## 5. Characteristics

### 5.1 Standard charge

Charge the battery with Lithium Battery special test cabinet, supply 54.75V voltage, constant-current

Test Items	Test Methods	Test Standards
Capacity retention rate	After standard charge under 5.1 specified conditions, store the cells for 28 days, then discharge at 0.2C ( A ) to cut-off voltage.	Capacity retention rate≥80%
Cycle Life	1) Standard charge at 0.2C ( A ) , 2) Rest 0.5~1 h 3) Discharge at 0.2C to cut off voltage 4) Capacity retention rate≥80%	>2000cycles @ 100% DOD; >3000cycles @ 90% DOD; >4000cycles @ 80% DOD;

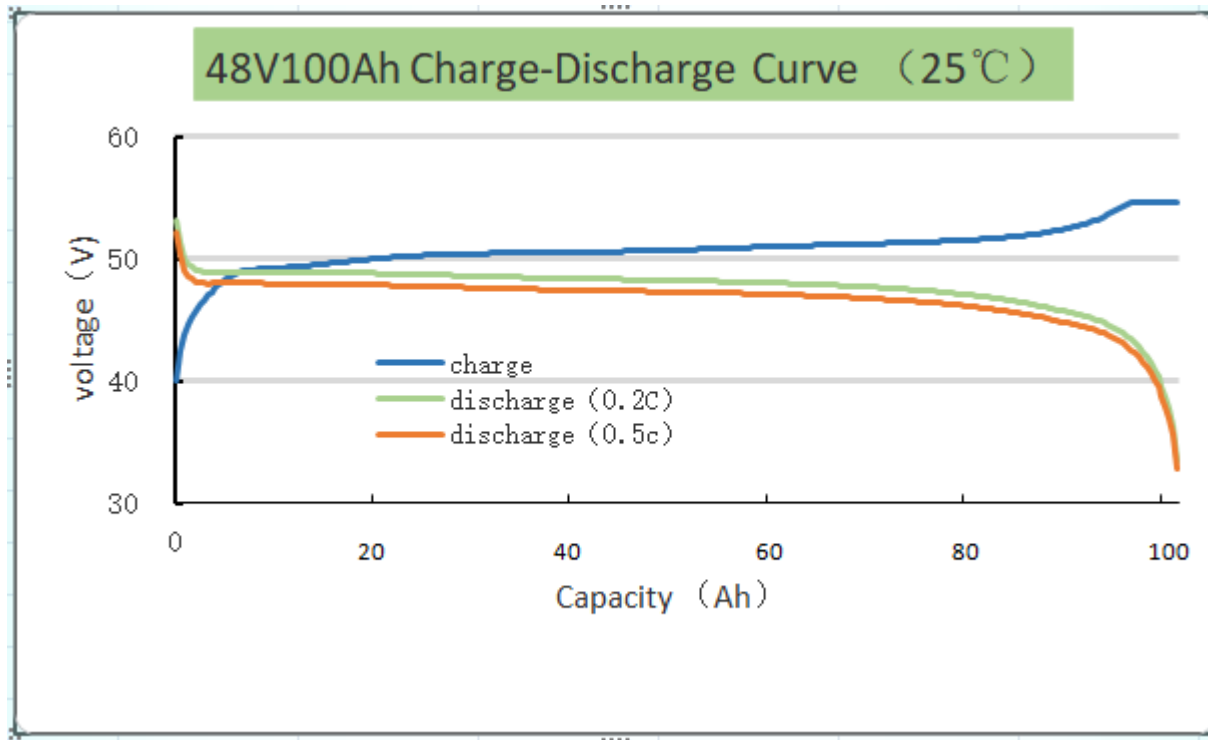
0.2C(A) current until current down to 0.02C ( A ) .

### 5.2 Standard discharge

Discharge the battery at 0.5C ( A ) to 37.5V or battery cut off voltage.

## MIL48-5,12 (51.2V 100Ah) LiFePO4 Battery Pack Specification

### 6 Electrical Performance



### 7. Cautions

**7.1** Charging current should not be more than maximum charge current specified in the Product Specification , Charging current bigger than recommended current may damage the battery;

**7.2** Discharging current should be no more than maximum discharge current specified in the Product Specification ; Discharging current bigger than recommended discharge current may damage the battery;

**7.3** It should be noted that the cell would be possible to be at a over-discharged state by its self-discharge characteristics in case the cell is not used for long time. In order to prevent over-discharging, the cell shall be charged periodically to maintain between 49.5-51V ( Recommended 3 months one cycle ) .Over-discharging may causes loss of cell performance, characteristics, or battery functions;

**7.4** Please charge the battery within 12 hours after use;

	<b>MIL48-5,12 (51.2V 100Ah) LiFePO4 Battery Pack Specification</b>	
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- 7.5 Battery storage environment follow the above conditions and in standard atmosphere, should be without strong magnet, no power, no static;
- 7.6 Do not reverse the polarity of the battery pack for any reason;
- 7.7 Do not short circuit the battery pack;
- 7.8 Do not reverse polarity charging;
- 7.9 Lithium Battery packs can be combined in series or in parallel according to the specification;
- 7.10 Do not immerse the battery pack in water or sea water, or get it wet;
- 7.11 Do not disassemble battery;
- 7.12 Do not expose the battery to extreme heat or flame;
- 7.13 Please use a compatible charger for charging;