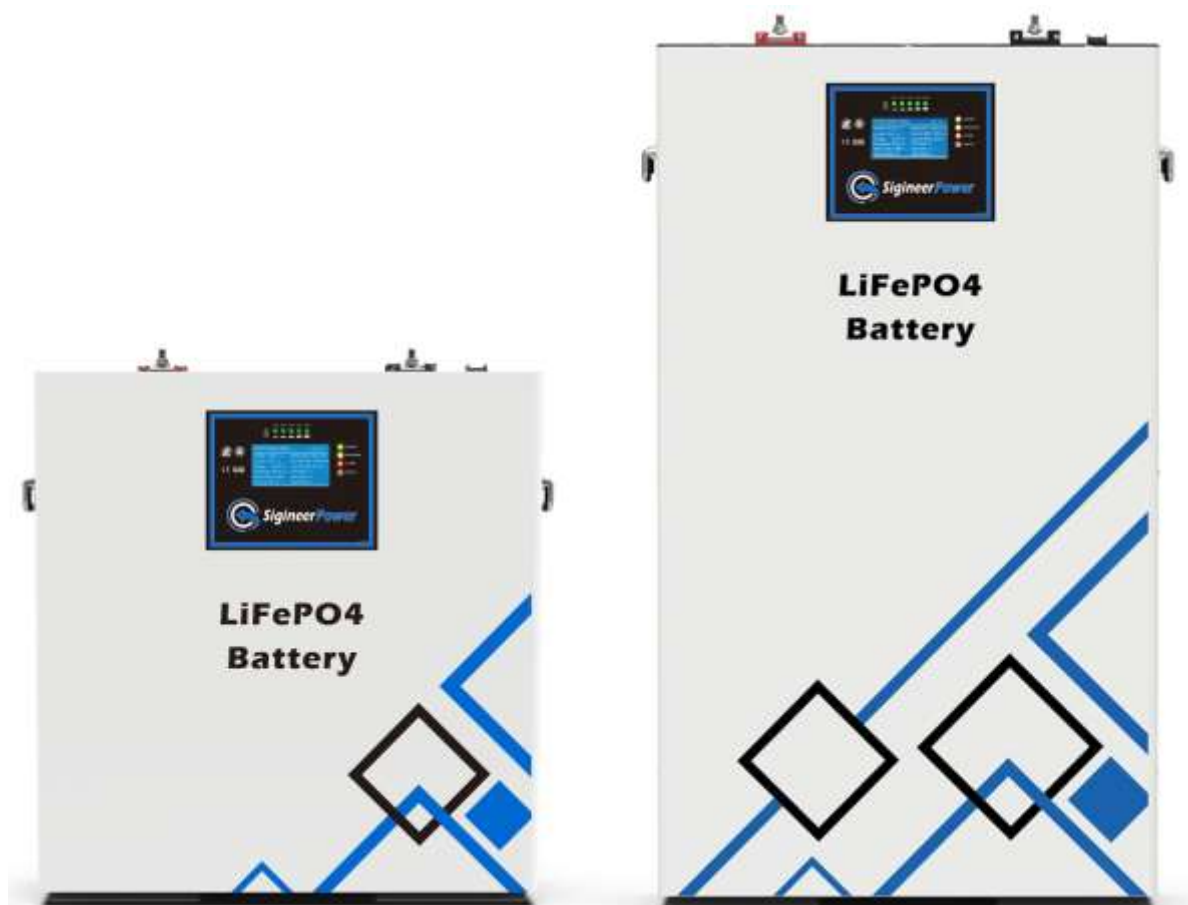


Sigineer Power Lithium Iron Phosphate Battery Pack User's Manual



Version 1.2 (PN:50000-20220506)

Model #
LFP24200
LFP24400
LFP48100
LFP48200

Manufacturer Information

Sigineer Power Limited
Email: info@sigineer.com
TEL: +86 769 82817616
US Warehouse: 4415 S 32nd St, Phoenix AZ 85040

Table of Contents

1 Important Safety Information	3
1.1 General Safety Precautions.....	3
1.2 Precautions When Working with Batteries.....	3
1.3 Handling Emergency Situations	4
1.4 Qualified Personnel	4
2 Introduction	5
2.1 General Information	5
2.2 Battery Features.....	5
2.3 Mechanical Drawing	6
2.4 Battery Specification.....	7
2.5 BMS Specification	8
2.6 LED Indication.....	9
2.7 ADS Switch	11
2.8 Communication Ports	12
2.9 Remote LCD Panel.....	13
2.10 Transportation and Storage.....	13
2.10.1 Transportation.....	13
2.10.2 Storage	14
3 Installation	15
3.1 Location.....	15
3.2 DC Wiring Recommendation	15
3.3 Grounding.....	16
3.4 Mounting Flange	17
5 Warranty.....	18

Please record the Sigineer Power unit’s model and serial number in case you need to provide this information in the future. It is much easier to record this information now than try to gather it after the unit has been installed.

Model Number: _____

Serial Number: _____

1 Important Safety Information

Save This Manual! Read this manual before installation, it contains important safety, installation and operating instructions. Keep it in a safe place for future reference.

All wiring must follow the National Electric Code, Provincial or other codes in effect at the time of installation, regardless of suggestions in this manual. All wires should be copper conductors.

Warning: Read this entire document before installing or using this product. Failure to do so or to follow any of the instructions or warning in this document can result in electrical shock, serious injury, or death, or can damage this product, potentially rendering it inoperable.

1.1 General Safety Precautions

1.1.1 For safety reasons, installers are responsible for familiarizing themselves with the contents of this document and all warnings before performing installation.

1.1.2 Over-voltages or wrong wiring can damage the battery pack and cause deflagration, which can be extremely dangerous. All types of breakdown of the product may lead to a leakage of electrolyte or flammable gas. Avoid installing the battery pack where flammable materials are stored. Do not install in places where explosive gas or chemicals are present. The utility grid, solar input, and battery voltage must be disconnected from the Battery Pack wiring. Wiring must be carried out by a qualified person.

Battery Pack is not user serviceable.

CAUTION: Equipment damage

When the battery is powered on, reverse its polarity may damage the DC loads.

Installation should ensure that the battery's DC output is, at no time, reversed with power on.

WARNING: LIMITATIONS ON USE

SPECIFICALLY, PLEASE NOTE THAT THE BATTERY SHOULD NOT BE USED IN CONNECTION WITH LIFE SUPPORT SYSTEMS OR OTHER MEDICAL EQUIPMENT OR DEVICES. WE MAKE NO WARRANTY OR REPRESENTATION IN CONNECTION WITH THEIR PRODUCTS FOR SUCH USES. USING THE BATTERY WITH THESE PARTICULAR EQUIPMENTS IS AT YOUR OWN RISK.

1.2 Precautions When Working with Batteries

Do not store this product in a place exposed to direct sunlight.

Do not expose battery to open fire or flame.

Do not place the product nearby flammables. It may lead to fire or explosion in case of accident.

Do not expose or place near water sources like downspouts or sprinklers.

A ventilated area is strongly recommended for handling the product.

Store the battery at cool and dry place. (Do not store in greenhouses and storage areas for hay, straw, chaff, animal feed, fertilizers, vegetables or fruit products.)

Store the product on a flat surface.

Store the product out of reach of children and animals.

Store the product where it should be minimal dust and dirt in the area.

Do not disconnect, disassemble or repair by unqualified personnel. Service must be made by qualified personnel only.

Do not damage the unit in such ways as dropping, deforming, impacting, cutting or penetrating with a sharp object. It may cause a leakage of electrolyte or fire.

Do not touch if liquid is spilled on the product. There is a risk of electric shock. Handle the battery wearing the insulated gloves.

Do not step on the product or the product package. The product may be damaged.

Do not place any foreign objects on the top of the Battery Pack.

Do not put the battery pack upside down on the ground.

Do not connect anode and cathode terminal block opposite direction.

Do not charge or discharge damaged battery.

If the battery pack is installed in the garage then ensure the product is above the height of the vehicle bumper.

The battery pack can only be installed indoors. If installed outdoors, do not allow the battery pack to be exposed to direct sunlight and water source as it may cause:

- Power limitation phenomena in the battery (resulting in a decreased energy production by the system)
- Premature wear of the electrical/electromechanical components and mechanical components.
- Reduction in performance, service life and possible damage of the battery

Only use the product with supplier recommend battery charger.

1.3 Handling Emergency Situations

The battery comprises multiple batteries and sophisticated BMS that are designed to prevent hazards resulting from failures. However, we cannot guarantee their absolute safety if battery is mishandled.

If a user happens to be exposed to internal materials of the battery cell due to damage on the outer casing, the following actions are recommended.

Inhalation: Leave the contaminated area immediately and seek medical attention.

Eye contact: Rinse eyes with running water for 15 minutes and seek medical attention.

Contact with skin: Wash the contacted area with soap thoroughly and seek medical attention

Ingestion: Induce vomiting and seek medical attention.

If a fire breaks out in the place where the battery pack is installed, perform the following countermeasures:

Fire extinguishing media

Respirator is not required during normal operations.

Use FM-200 or CO2 extinguisher for battery fire.

Use an ABC fire extinguisher, if the fire is not from battery and not spread to it yet.

Firefighting instructions

If fire occurs when charging batteries, if it is safe to do so, power off the switch.

If the battery pack is not on fire yet, extinguish the fire before the battery pack catches fire.

If the battery pack is on fire, do not try to extinguish but evacuate people immediately

Effective ways to deal with accidents

On land: Place damaged battery into a segregated place and call local fire department or service engineer.

In water: Stay out of the water and do not touch anything if any part of the battery, inverter, or wiring is submerged.

Do not use submerged battery again and contact the service engineer.

1.4 Quqlified Personnel

This guide and the tasks and procedures described herein are intended for use by skilled workers only. A skilled worker is defined as a trained and qualified electrician or installer who has all of the following skills and experience:

Knowledge of the functional principles and operation of on-grid and off-grid (backup) systems.

Knowledge of the dangers and risks associated with installing and using electrical devices and acceptable mitigation methods.

Knowledge of the installation of electrical devices

Knowledge of and adherence to this guide and all safety precautions and best practice

Make sure all power is off and wires/breakers are disconnected when maintaining/servicing the lithium battery

2 Introduction

2.1 General Information

Thank you for purchasing the LFP Series LiFePO₄ Battery Pack.

The LFP Series LiFePO₄ Battery Pack is designed with UL listed battery cells and a very sophisticated automotive grade BMS.

Packed with unique features, it is one of the most technically advanced lithium battery pack on the market.

Its strong BMS can be discharged at 1C(with 200% surge for 3 seconds) and charged at 0.5C.

Suitable for applications such as Industrial/ Household/ Commercial/ Land Vehicle/ Solar Energy Storage

More features are listed below

2.2 Battery Features

*Heavy Duty Industrial Design

The DC terminal of the battery is rated at 500 amps and the enclosure structure is designed to withstand the strong vibrations from vehicles & boats.

*UL1642 & TUV Certified Battery Cells Ensures Long Lifespan of 3,500 Cycles at 80% DOD, 6000 Cycles at 60% DOD.

*Sophisticated BMS with Automotive-Grade Electronics

Unlike other MOSFETs based BMS on the market, our BMS is designed with high current DC contactor with much higher reliability. Apart from the software protection, we have two layers of hardware protection: DC contactor and fuse. These protections ensure the cells will be well protected in the event of abnormalities.

*Polarity Reverse Protection For DC Loads

When the MOSFETs based BMS is powered on, it will immediately output full current without detecting the polarity of the connected DC loads, this high current will inevitably result in the load damage when the battery polarity is reversed.

While for our DC contactor based BMS, we have a detector for polarity, once the load polarity is reversed, the battery will not be powered up.

The protection only works at start up, if the battery is already powered on before the polarity reverse, the load could still be damaged.

*Auto Recovery After Overcharge Protection

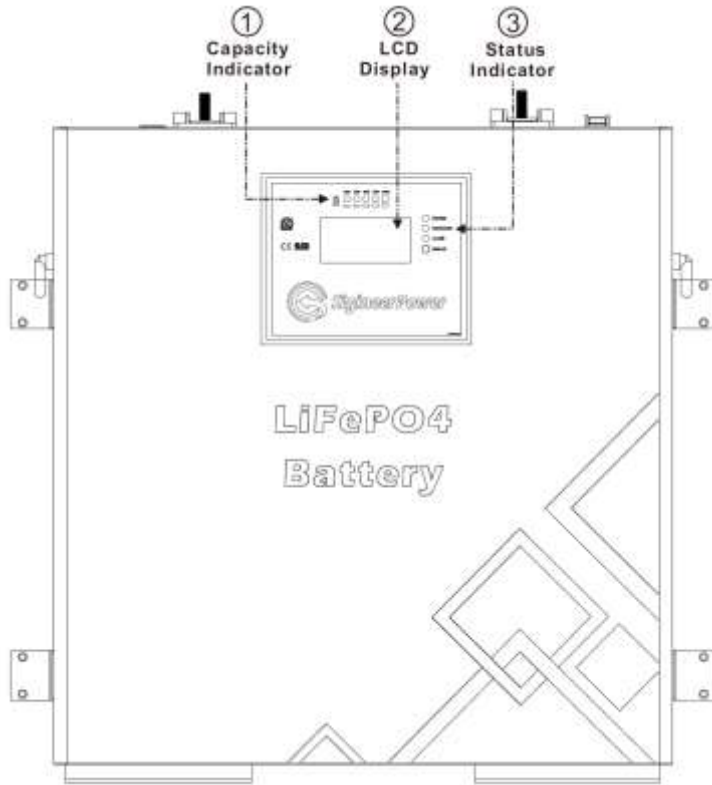
For the Sigineer BMS, the BMS will be automatically recovered when overcharge releases condition is met. The battery pack will output power automatically.

*Parallel up to 10 pcs

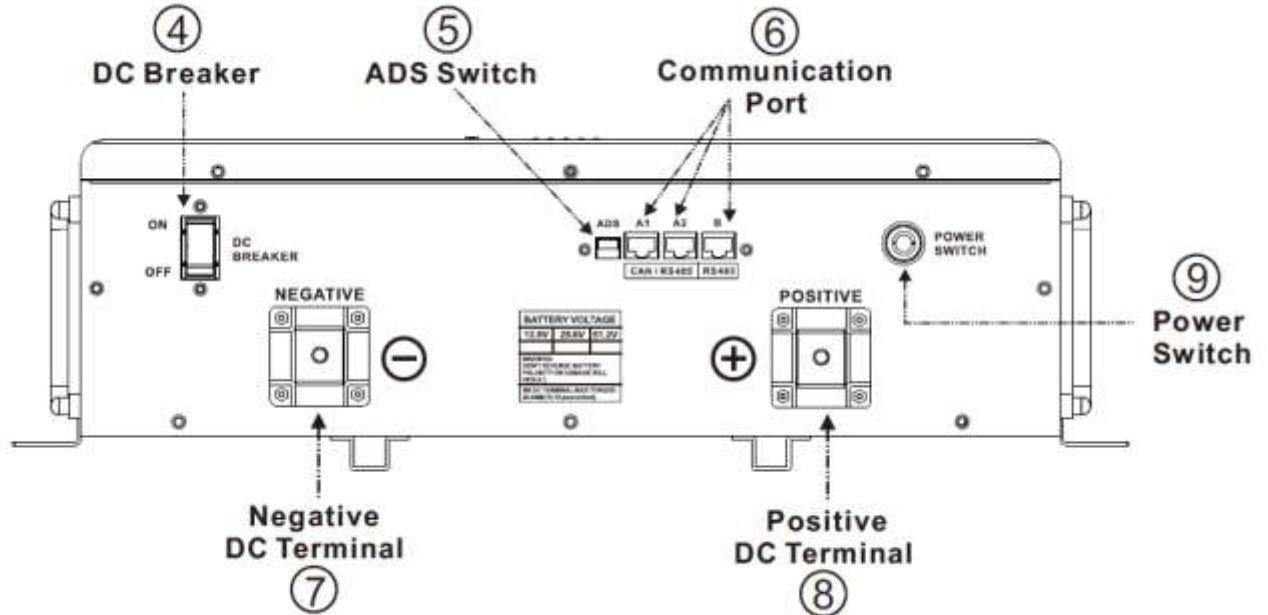
*Remote LCD Display & Computer Monitor Available

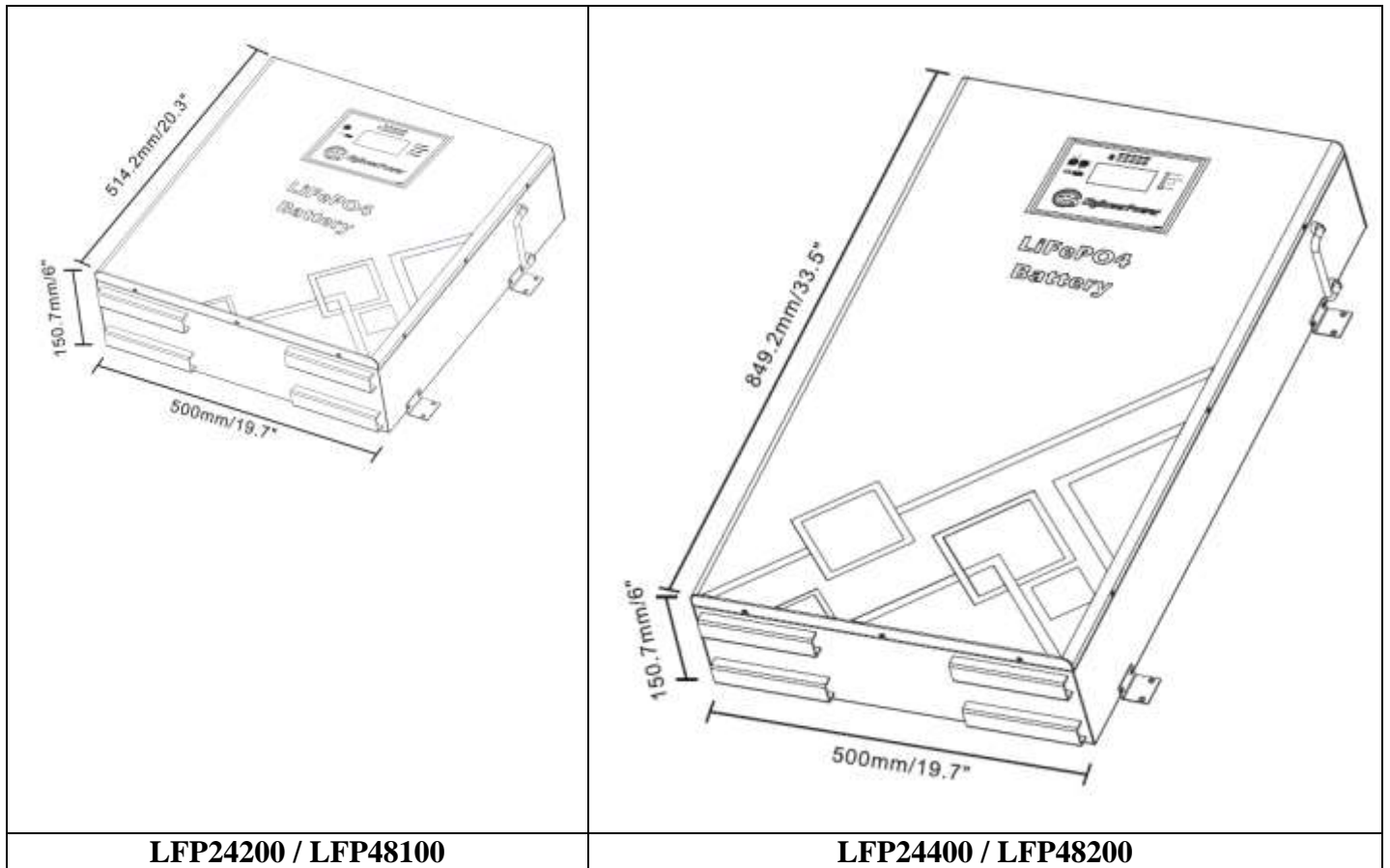
2.3 Mechanical Drawing

Front Side



DC SIDE





LFP24200 / LFP48100

LFP24400 / LFP48200

2.4 Battery Specification

Model #	LFP24200	LFP48100	LFP24400	LFP48200
Nominal voltage	25.6V	51.2V	25.6V	51.2V
Battery Voltage	48V	48V	48V	48V
Rated Capacity	200AH	100AH	400AH	200AH
Rated Energy	5.12kWh	5.12kWh	10.24kWh	10.24kWh
Output Voltage Range	20-29.2V	40-58.4V	20-29.2V	40-58.4V
Battery Cell Type	Prismatic Pouch	Prismatic Pouch	Prismatic Pouch	Prismatic Pouch
Battery Cell	3.2V100AH	3.2V100AH	3.2V100AH	3.2V100AH
Battery Cell Configuration	8 strings	16 strings	8 strings	16 strings
Rated Charge Voltage	28V	56V	28V	56V
Max Charge Voltage	28.4V	56.8V	28.4V	56.8V
Over Charge Protection	29.2V	58.4V	29.2V	58.4V
Charge Mode	CC-CV	CC-CV	CC-CV	CC-CV
Over Discharge Protection	20V	40V	20V	40V
Rated Charge Current	100A	50A	150A	100A
Rated Discharge Current	200A	100A	300A	200A
Peak Discharge Current	240A	120A	360A	240A
Reverse Polarity Protection	Yes	Yes	Yes	Yes
Lifespan 25°C	>10 Years			
Cycle Life	> 3500 times [80%DOD,@20°C]			

Charge Temp Range	0°C ~ 55°C /32°F-131°F			
Discharge Temp Range	/-20°C ~ 65°C /-4°F ~ 149°F			
IP Level	IP21			
Storage temperature	0°C ~40°C/32°F-104°F			
Self Discharge Rate	≤3% monthly			
Communication	RS232 / RS485 / CAN			
Unit Size (W×D×H)	514*500*150mm/ 20.3*19.7*6"	514*500*150mm/ 20.3*19.7*6"	849*500*150mm/ 33.5*19.7*6"	849*500*150mm/ 33.5*19.7*6"
Shipping Size (W×D×H)	660*650*390mm/ 26*25.6*15.4"	660*650*390mm/ 26*25.6*15.4"	1000*650*390mm/ 39.4*25.6*15.4"	1000*650*390mm/ 39.4*25.6*15.4"
Net Weight	55KG/121lbs	55KG/121lbs	100KG/220lbs	100KG/220lbs
Gross Weight	65KG/143lbs	65KG/143lbs	115KG/253lbs	115KG/253lbs
Storage Temp & Period	6 Months @+25°C	3 Months @+35°C	1 Months @+45°C	
Regular Transportation	UN38.3			
Warranty	3-Year			

2.5 BMS Specification

The LiFePO4 Battery Management System (BMS) 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.

Items	Warning (for each cell)	Value	Alarm LED(Red)
Over charge	Over-charge warning	3700mv	once/3s flash, keep output
	Over-charge protection	3750mv	once/1s flash, relay cut off
	Over-charge warning release	3400mv	
	Over-charge protection release	3350mv	
	Over-charge release method	Restart & Discharge	
Over discharge	Over-discharge warning	2700mv	once/3s flash, keep output
	Over-discharge protection	2500mv	once/1s flash, relay cut off
	Over-discharge warning release	2900mv	
	Over-discharge protection	2800mv	
	Over-discharge release method	Charging	
Over current (CHG&DISCHG)	Over current warning	110% rated	once/1s flash, 30s off
	Over current protection(PEAK)	120% rated	Lightning, delay 10s off relay cut off
	Over current release method(CHG)	Restart	
	Over current release method(DISCHG)	Cut off loads and Restart	
Over & Lower Temp (Discharging)	Over temperature	Warning @55°C	once/3s flash, keep output
		Protection @60°C	once/1s flash, relay cut off
		Warning Release @40°C	
		Protection Release @55°C	
	Lower temperature	Warning @-20°C	once/3s flash, keep output

		Protection @-25°C	once/1s flash, relay cut off
		Warning Release @-15°C	
		Protection Release @-20°C	
Over & Lower Temp (Charging)	Over temperature	Warning @45°C	once/3s flash, keep output
		Protection @50°C	once/1s flash, relay cut off
		Warning Release @40°C	
		Protection Release @45°C	
	Lower temperature	Warning @0°C	once/3s flash, keep output
		Protection @-5°C	once/1s flash, relay cut off
		Warning Release @5°C	
		Protection Release @0°C	

Battery Management System. The built in BMS is a central hub inside the battery that maintains constant voltage, current and temperature. The BMS allows for maximum charging capacity for faster charging and efficient discharging. It also communicates with the desktop monitoring software via the RS485 or CAN port.

2.6 LED Indication



The 6 LED indicators on the front panel show the battery pack operational state as below:

Charge LED(Green)	Constantly On: Normal Charging
Discharge LED(Yellow)	Constantly On: Normal Discharging
Alarm LED(Red)	Flash once/3S: Sarning
	Flash once/1S: Protection Triggered
	Constantly On : Fault
Idle	SOC ≤ 5%, LED1, LED2, LED3, LED4, LED 5 All Dim
	5% < SOC ≤ 20%, LED1 On, LED2, LED3, LED4, LED 5 Dim
	20% < SOC ≤ 40%, LED1 On, LED2 On , LED3, LED4, LED 5 Dim
	40% < SOC ≤ 60%, LED1 On, LED2 On, LED3 On , LED4, LED 5 Dim

	<p>SOC ≤ 80%, LED1 On, LED2 On, LED3 On , LED4 On, LED 5 Dim</p> <p>80% < SOC, LED1, LED2, LED3, LED4, LED 5 All On</p>
SOC LEDs (4 Green)	<p>In Charge Mode</p> <p>SOC ≤ 20%, LED1, LED2, LED3, LED4, LED5 flash in turn</p> <p>20% < SOC ≤ 40%, LED1 Constant On, LED2, LED3, LED4, LED5 flash in turn</p> <p>40% < SOC ≤ 60%, LED1, LED2 Constant On , LED3, LED4, LED5 flash in turn</p> <p>60% < SOC ≤ 80%, LED1, LED2, LED3 Constant On , LED4, LED5 flash in turn</p> <p>80% < SOC ≤ 90%, LED1, LED2, LED3 , LED4 Constant On, LED5 flash</p> <p>90% < SOC, LED1, LED2, LED3, LED4, LED5 Constant On</p> <p>In Discharge Mode</p> <p>SOC ≤ 5%, LED1, LED2, LED3, LED4, LED 5 All Dim</p> <p>5% < SOC ≤ 20%, LED1 Flash, LED2, LED3, LED4, LED 5 Dim</p> <p>20% < SOC ≤ 40%, LED1 On, LED2 Flash , LED3, LED4, LED 5 Dim</p> <p>40% < SOC ≤ 60%, LED1 On, LED2 On, LED3 Flash , LED4, LED 5 Dim</p> <p>60% < SOC ≤ 80%, LED1 On, LED2 On, LED3 On , LED4 Flash, LED 5 Dim</p> <p>80% < SOC ≤ 95%, LED1, LED2, LED3, LED4 ON, LED 5 Flash</p> <p>90% < SOC, LED1, LED2, LED3, LED4, LED5 Constant On</p>

LiFePO4 Battery Status		ID: 1/3
Voltage: 53.32 V	Rated CAP: 200.0 AH	
Current: 0.47 A	Current CAP: 188.9 AH	
Charge: 105.0 H	Current SOC: 94.5 %	
Discharge: 160.8 H	Full Cycle: 2	
Alarm Code: 0000	Over Volt: 0	
Over Current: 0	Over Temp: 1	

Cell Voltage & Temp (mV & °C)				ID: 1/3
C1: 3321	C2: 3322	C3: 3321	C4: 3321	
C5: 3321	C6: 3325	C7: 3320	C8: 3320	
C9: 3322	C10: 3321	C11: 3320	C12: 3320	
C13: 3322	C14: 3322	C15: 3320	C16: 3321	
T1: 22.3	T2: 22.3	T3: 21.7	T4: 22.9	
MaxV: 3324	MinV: 3319	MaxT: 22.9	MinT: 21.7	

ID	Current battery identity number
Voltage:	Current ID battery voltage
Rated CAP:	Battery rated capacity of current ID
Current:	Positive means charge, Negative means discharge
Current CAP:	Remaining capacity of current ID battery

Charge:	Estimated time to charging battery full
Current SOC:	Remain SOC of current ID battery
Discharge:	Estimated time to discharge battery empty
Full Cycle:	Battery cycle times of current ID
ID:	Current battery identity number
Alarm Code:	Refer to the battery pack alarm code table
Over Volt	Number of battery voltage alarm times
Over Current	Number of battery current alarm times
Over Temp	Number of battery temperature alarm times
C1——C16	Internal cells voltage
T1——T4	Internal temperature detecting value
Max V	Maximum cell voltage
Min V	Minimum cell voltage
Max T	Maximum internal temperature detecting value
Min T	Minimum internal temperature detecting value

Battery pack alarm code table

0000	normal
0100	Cell Over-voltage Warning
0200	Cell Over-voltage Protection
0400	Cell Low-voltage Warning
0800	Cell Low-voltage Protection
0010	Cell Over-temp Warning
0020	Cell Over-temp Protection
0040	Cell Low-temp Warning
0080	Cell Low-temp Protection
0001	Discharge Over-current Warning
0002	Discharge Over-current Protection
0004	Charge Over-current Warning
0008	Charge Over-current Protection

2.7 ADS Switch

The ADS DIP switches allow users to manually assign the battery an ID for easier monitoring via remote LCD panel or computer software.

When the DIP switch is set to ON position, the value is 0, on the upward position, the value is 1.



SW1	SW2	SW3	SW4	BMS ID
0	0	0	0	0
1	0	0	0	1
0	1	0	0	2
1	1	0	0	3
0	0	1	0	4
1	0	1	0	5
0	1	1	0	6
1	1	1	0	7
0	0	0	1	8
1	0	0	1	9
0	1	0	1	10
1	1	0	1	11
0	0	1	1	12
1	0	1	1	13
0	1	1	1	14
1	1	1	1	15

2.8 Communication Ports

There are 3 communication ports on the LFP lithium batteries

Communication Port	A1	A2	B
Type	CAN/RS485	CAN/RS485	RS485
Connection	Parallel Cable. Remote LCD Panel. CAN Card.		Inverter BMS Port.

Port A1 & A2 Function:

The A1 & A2 ports are identical, supporting both RS485 and CAN.

They connect to parallel cable, remote LCD panel or CAN card.

After parallel connection between batteries, the remaining two unplugged ports can be connected to the remote LCD panel or CAN card.

If multiple batteries are connected in parallel, one of them must be connected to the remote LCD panel then establish communication from the remote LCD panel to the inverter BMS port.

Port B Function:

The B port connects to the inverter BMS port when the battery is used individually.

Operation Notes:

The lithium battery only communicates with dedicated inverters with the same protocol. Please contact us to get the compatible inverter model list.

The battery can also work with inverters without communication if the inverter has proper charge and cut off voltages.

Here is the recommendation on the settings:

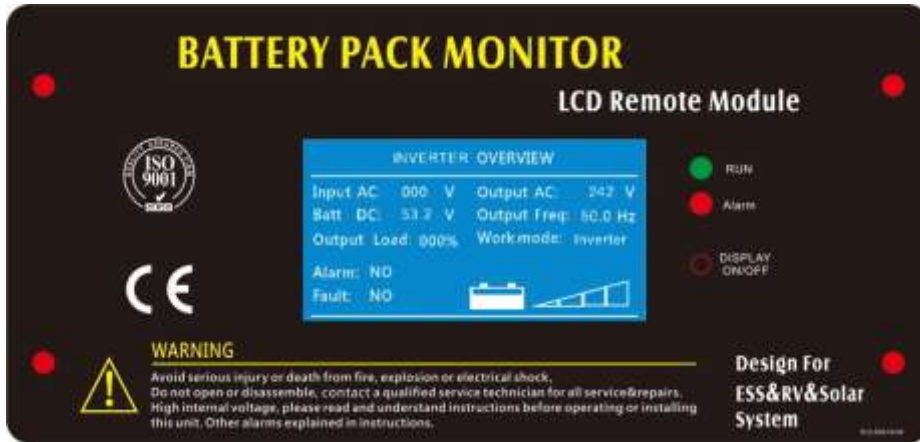
Protection Notes:

When overcharge or over discharge protection is triggered, the battery will still discharge or accept charging.

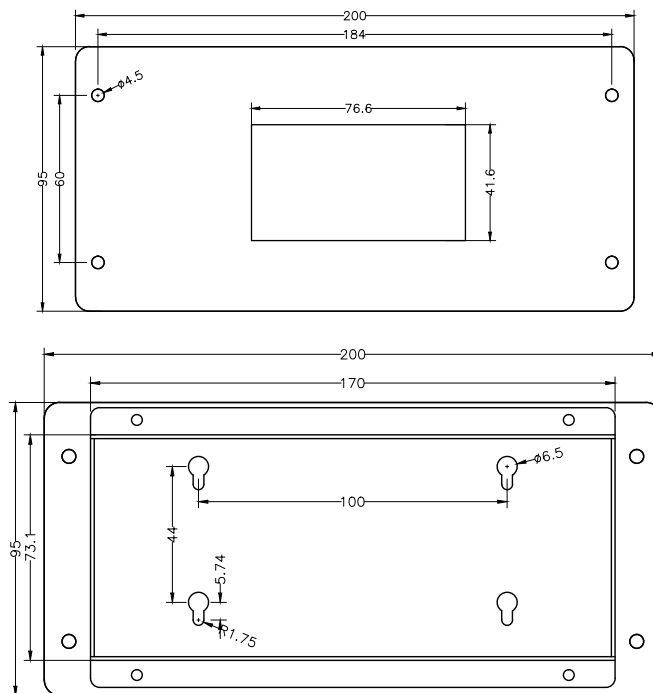
When over current protection is triggered, the power switch needs to be reset for the battery to resume operation.

2.9 Remote LCD Panel

The LFP battery A1&A2 ports can be plugged into a remote LCD panel to show battery status.



Mechanical Drawing & Install dimension



2.10 Transportation and Storage

2.10.1 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 ware house -20°C~35°C where it's dry, clean, shade, and well-ventilated. The battery should be stored in 45~55% SOC during transportation.

Product is adapted to the truck, boat, transport. When in transport, it should be covered to avoid the sunlight, and with civilized loading and unloading. With product packaging box allows using any kinds of transport, battery in loading and unloading process should be light moving gently to prevent throwing, rolling,

pressing. Direct rain and mechanical impact of rain and snow should be avoided in transportation.

2.10.2 Storage

Product storage should be kept in dry warehouse, not sun and rain. The harmful gases are not allowed in the warehouse, as well as flammable and explosive products and corrosive chemicals. To avoid mechanical impact, stress and strong magnetic field effect, avoid direct sunlight and away from heat source not be less than 2m, the packing box should pad off the ground at least 20 cm high, away from the wall, window, or the air inlet at least 50cm. Under the provisions of the conditions of storage period of more than 3 months of products should charge once, storage period of more than 6 months products must check and test the capacity, store for more than 1 years of products must be re-examined, only can be used when is qualified.

1	Storage Temperature	Less than 1 month	-20~35°C
		Less than 6 months	-10~30°C
2	Storage humidity	45~75%RH	

3 Installation

3.1 Location

Follow all the local regulations to install the Battery.

Please install the equipment in a location of Dry, Clean, Cool with good ventilation.

Working temperature: - 10°C to 40°C (-14°F to 104°F)

Storage temperature: - 40°C to 70°C (-40°F to 158°F)

Relative Humidity: 0% to 95%, non-condensing

Cooling: Forced air

Warning! Operation in a condensing environment will invalid warranty.

3.2 DC Wiring Recommendation

It is suggested the battery bank be kept as close as possible to the inverter. The following table is a suggested wiring option for DC cable with length from 1 meter to 5 meters.

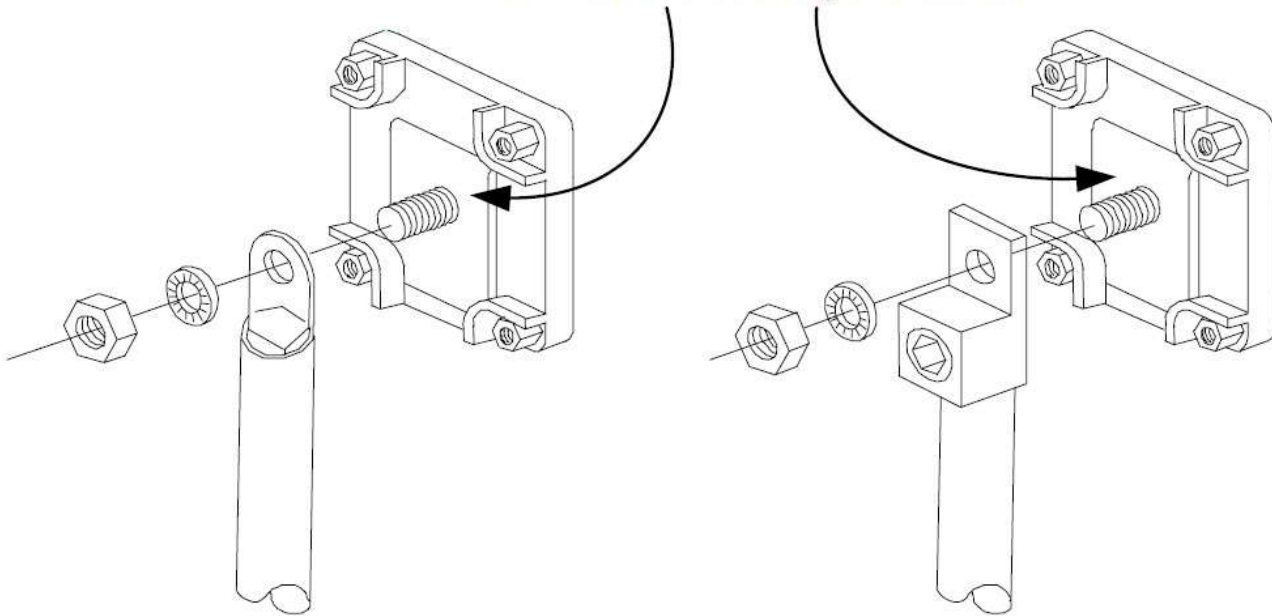
Please follow the above minimum wire size requirement.

One cable is always best, but if there is a problem obtaining for example 100mm² cable, use 2*50mm² or 3*35mm² instead, as long as the square area adds up. Performance of any product can be improved by thicker cable and shorter runs, so if in doubt round up and keep the length as short as possible.

Battery cables must have crimped (or preferably, soldered and crimped) copper compression lugs unless aluminum mechanical lugs are used. Soldered connections alone are not acceptable. High quality, UL-listed battery cables are available. These cables are color-coded with pressure crimped, sealed ring terminals.

Battery terminal must be clean to reduce the resistance between the DC terminal and cable connection. A buildup of dirt or oxidation may eventually lead to the cable terminal overheating during periods of high current draw. Use a stiff wire brush and remove all dirt and corrosion from the battery terminals and cables.

Do not place anything
between battery cable lug
and terminal surface.
Assemble exactly as shown.



2/0 Copper Compression Lug


2/0 Aluminum Mechanical Lug

Reducing RF interference

To reduce the effect of radiated interference, twist the DC cables. To further reduce RF interference, shield the cables with sheathing /copper foil / braiding.

Taping battery cables together to reduce inductance

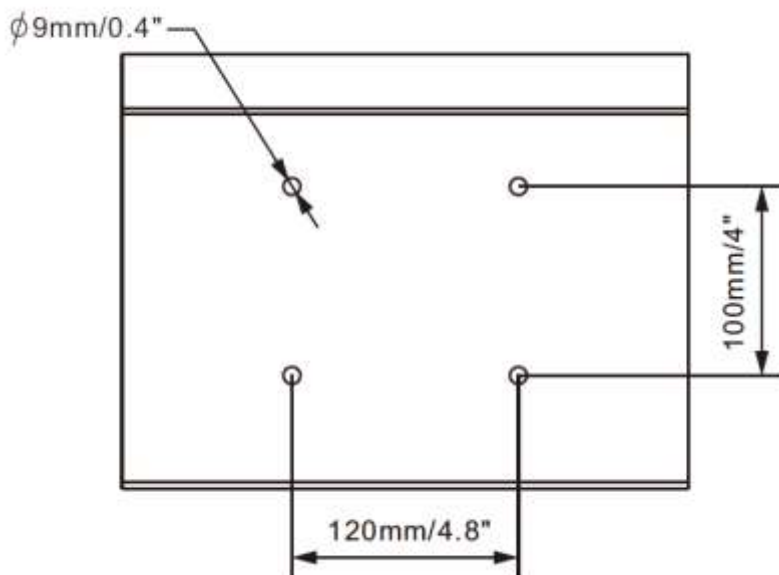
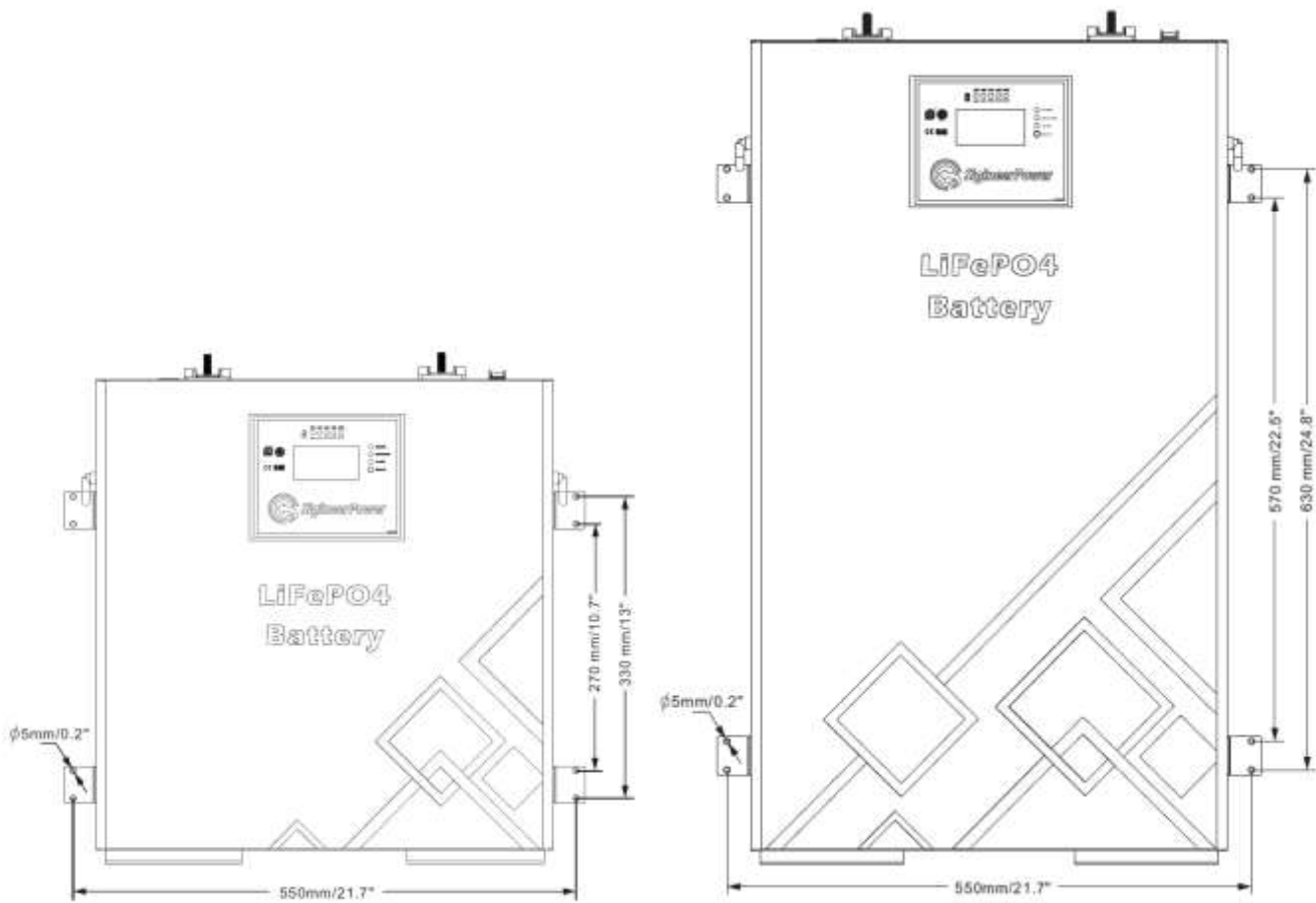
Do not keep the battery cables far apart. In case it is not convenient to twist the cables, keep them taped together to reduce their inductance. Reduced inductance of the battery cables helps to reduce induced voltages. This reduces ripple in the battery cables and improves performance and efficiency.

 WARNING	<p>The torque rating range for DC terminal is 12.5NM-20.5NM(9.25-15.19 pound-foot), and the suggested torque rating is 17NM(12.6 pound-foot). Over torquing may cause the bolt to break.</p>
	<p>Equipment Damage The battery is reverse polarity protected at start up. Reversing the battery polarity when it is powered on could damaged your DC loads.</p>

3.3 Grounding

Connect an AWG 8 gauge or greater copper wire between the grounding terminal on the battery and the earth grounding system or the vehicle chassis.

3.4 Mounting Flange



Wall mount bracket

4 Warranty

We warrant this product against defects in materials and workmanship for a period of one year from the date of purchase and will repair or replace any defective High Power Inverter when directly returned, postage prepaid, to manufacturer. This warranty will be considered void if the unit has suffered any obvious physical damage or alteration either internally or externally and does not cover damage arising from improper use such as plugging the unit into an unsuitable power sources, attempting to operate products with excessive power consumption requirements, reverse polarity, or use in unsuitable climates.

WARRANTY DOES NOT INCLUDE LABOR, TRAVEL CHARGES, OR ANY OTHER COSTS INCURRED FOR REPAIR, REMOVAL, INSTALLATION, SERVICING, DIAGNOSING OR HANDLING OF EITHER DEFECTIVE PARTS OR REPLACEMENT PARTS. THE WARRANTOR ASSUMES NO LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND.

LOSS OR DAMAGE: Loss or damage in transit is the responsibility of the carrier. Any claim should be filed with the delivering transport company. Invoice, Bill of Lading and Delivery receipt with damage noted therein must accompany any claims for freight damage. Claims for shortage and lost shipments must be made in writing to the shipper within 3 days of the receipt of shipment. Claims not reported within this time frame will not be honored.

This warranty does not apply to and we will not be responsible for any defect in or damage to:

- a) the product if it has been misused, neglected, improperly installed, physically damaged or altered, either internally or externally, or damaged from improper use or use in an unsuitable environment; violations of the warnings in the manual will invalidate the warranty.
- b) the product if it has been subjected to fire, water, generalized corrosion, biological infestations, or input voltage that creates operating conditions beyond the maximum or minimum limits listed in the product specifications including high input voltage from generators and lightning strikes;
- c) the product if repairs have been done to it other than by us or its authorized service centers;

SAVE THIS MANUAL!

**READ THIS MANUAL BEFORE INSTALLATION, IT
CONTAINS IMPORTANT SAFETY, INSTALLATION AND
OPERATING INSTRUCTIONS. KEEP IT IN A SAFE PLACE
FOR FUTURE REFERENCE.**

Sigineer Power Limited
Email: info@sigineer.com
TEL: +86 769 82817616
US Warehouse: 4415 S 32nd St, Phoenix AZ 85040