LEAPTON SOLAR

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LEAPTON SOLAR



Rechargeable Li-ion Battery
User Manual

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1. Product overview

1.1 Introduction:

The model $LiFePO_4$ battery pack is designed specifically for energy storage systems, with higher efficiency and higher reliability. With the intelligent battery management system, the intelligent battery detection system. This model of $LiFePO_4$ battery pack is ideal for off-grid and hybrid utilization, providing a long-term built solution, and has the ability to deploy and use in a variety of scenarios, such as homes, farms, factories, data rooms, hotels, etc.

1.2 Features:

★ $LiFePO_4$ chemicals give batteries a safer performance, longer life and energy density

★ The fully intelligent battery management system (BMS) protects the battery pack and the battery from over-discharge, over-charge, over-current, and high/low temperature

★ The intelligent monitoring system, which can monitor and download the data to the computer in real time

★ The battery comes with a balance function that greatly extends the service life of the battery

★ The batter y has no memory effect, and can deeply charge and release the battery

★ The self-discharge consumption is very small, more than 24 hours without the battery will automatically enter the low power mode

★ Environmentally friendly, free of heavy metals and harmful substances, and meets the ROHS requirements

★ The battery can be used in parallel for any scenario requiring a large power backup

★ Battery do not require active maintenance, one-time purchase guarantees life (assuming you use the right battery and follow the guidelines)

★ Cell meets IEC62619, CE standards, and ROHS requirements

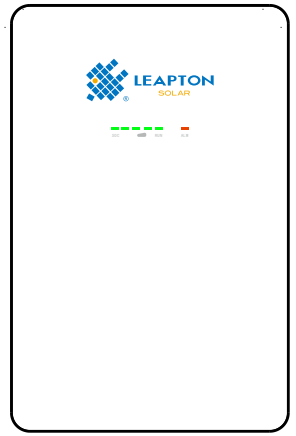
1.3 Specification and Performance:

1.3.1 Parameters

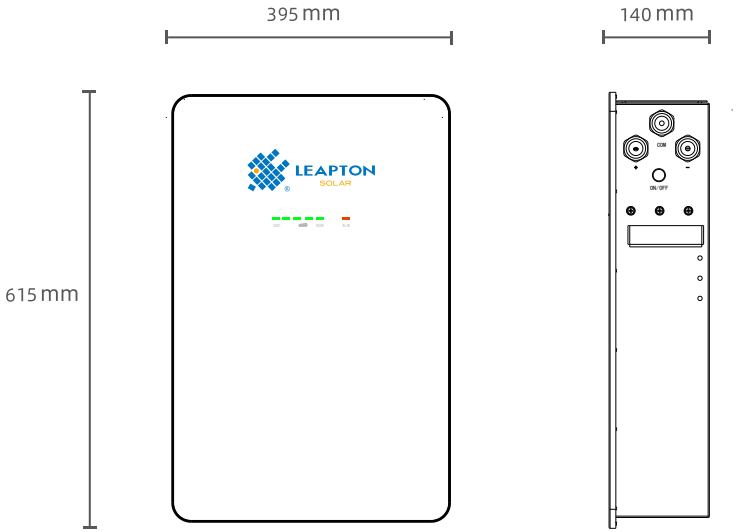
Project	Conventional Parameters
Battery Type	$LiFePO_4$
Model	EL-A05
Compound Mode	1P16S
Rated Capacity	100Ah
Nominal Voltage	51.2V
Energy	5.12KWh
Operation Voltage Range	40~58.4V
Maximum charging current	100A
Maximum discharge current	100A
Recommend Charge Current	50A
Operating Temperature Range	Charge:0~55°C, Discharge:-20~55°C
Storage Temperature Range	-10~55°C
Dimensions (W × H × D mm)	395*615*140mm
Weight	43±3kg
Live Capacity Of Products Shipped	40% -60% Electricity delivery
Packaging Material	Carton
Communication	RS485 / RS232

1.3.2 Interface Definition

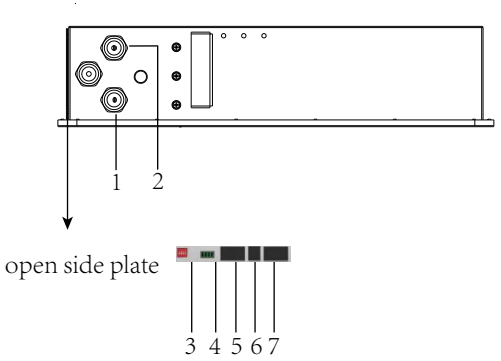
A) Battery Appearance



B) Battery Size

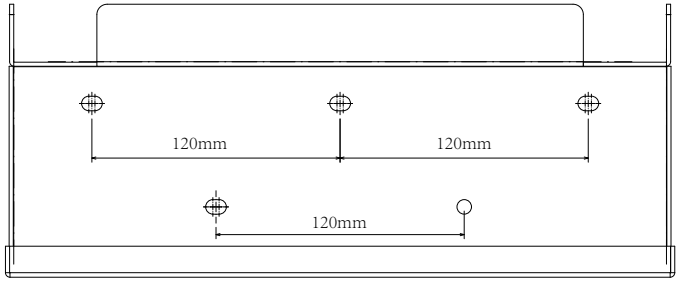


C) Panel Interface Refer To The Following Figure

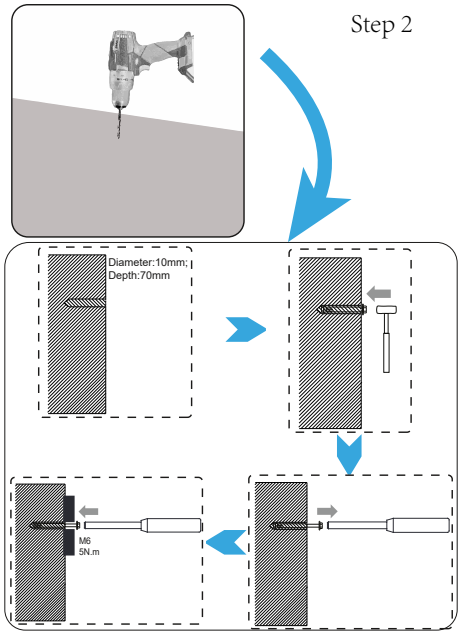


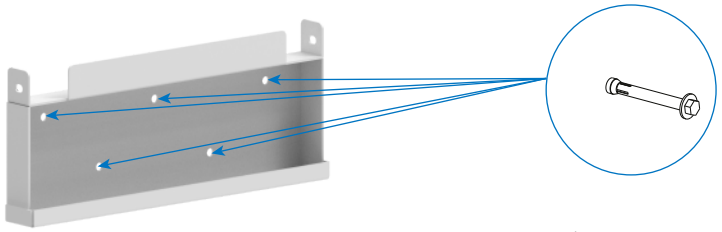
Number	Project	Description
1	Positive Terminal	The terminal can realize the charge and discharge funtion
2	Negative Terminal	The terminal can realize the charge and discharge funtion
3	Dial Key	When multiple modules are connected in parallel, different address codes can be specified for each battery module, up to 15
4	Dry Contact Point	1/ 2 Open, close when fault protection; 3 / 4 open, low battery power alarm
5	RS485/CAN	RJ45 interface, the interface connected to the inverter
6	RS232	RJ11 interface, used for battery status monitoring
7	parallel operation RS485	RJ45 interface, used for parallel communication or battery status monitoring, manufacturer commissioning, and service

1.3.3 Wall-mounted installation instructions

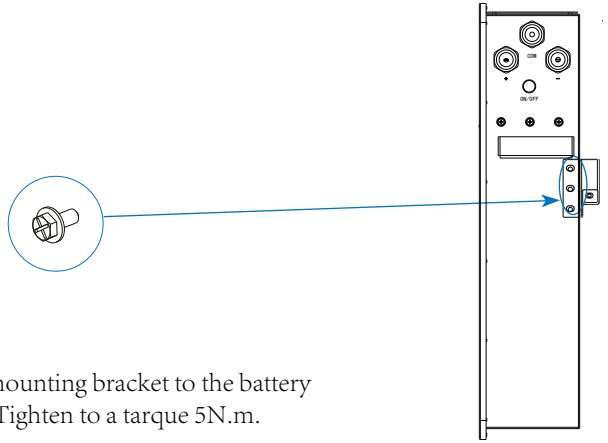


Step 1:Mounting Hole Dimensions

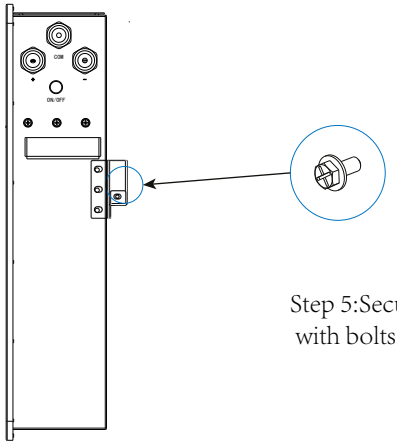




Step 3:Secure the supporting bracket to the wall using expansion bolts M6*50,Tighten to a tarque 12N.m.



Step 4:Secure the mounting bracket to the battery with bolts M6*10,Tighten to a tarque 5N.m.



Step 5:Secure the mounting bracket to the supporting bracket with bolts M5*12,Tighten to a tarque 4N.m.

Project	Description
	Main unit*1
	Battery positive terminal cable*1
	Battery negative terminal cable*1
	Battery and Inverter communication cable *1
	Ground wire*1
	User Manual*1
	M6*50 Expansion screw*5
	M5*12 screw*8
	M6*10 screw*6
	Wall-mounter Bracket*1
	Supporting Bracket*1

2. Battery management system

2.1 Description of the LED indicator light

State	Normal /Report an emergency /protect	RUN	ALM	Battery Indicator LED				illustrate
				L4	L3	L2	L1	
		●	●	●	●	●	●	
Shutdown Status	Resting State	OFF	OFF	OFF	OFF	OFF	OFF	ALL OFF
Stand By	Normal	Flashing 1	OFF	According to the electricity instruction				position in readiness
	Report an emergency	Flashing 1	Flashing 3					Module Low Voltage
Charge	Normal	ON	OFF	According to the electricity instruction (Top indicator LED flashing 2)				Maximum battery LED flashing (flashing 2), ALM does not flash when overcharging alarm occurs
	Report an emergency	ON	Flashing 3					
	overcharge protection	ON	OFF	ON	ON	ON	ON	If there is no urban electricity, The indicator light is in standby mode
	Over current Protection	OFF	ON	OFF	OFF	OFF	OFF	Stop Charging
Discharge	Normal	Flashing 3	OFF	According to the electricity instruction				
	Report an emergency	Flashing 3	Flashing 3					
	Undervoltage Protection	OFF	OFF	OFF	OFF	OFF	OFF	Stop Discharge
	Over current Protection	OFF	ON	OFF	OFF	OFF	OFF	Stop Discharge
Lose Efficacy		OFF	ON	OFF	OFF	OFF	OFF	Stop Charging And Discharging

2.2 Status indication

Stand By		Charging				Discharge			
Capacity indicator light		L4●	L3●	L2●	L1●	L4●	L3●	L2●	L1●
Quantity of electricity	0% ~ 25%	OFF	OFF	OFF	Flashing2	OFF	OFF	OFF	ON
	25% ~ 50%	OFF	OFF	Flashing2	ON	OFF	OFF	ON	ON
	50% ~ 75%	OFF	Flashing2	ON	ON	OFF	ON	ON	ON
	75% ~ 100%	Flashing2	ON	ON	ON	ON	ON	ON	ON
Run The Indicator light, the●		ON				Flashing 3			

2.3 The LED Indicator Light Flashing Description

Flashing Mode	ON	OFF
Flashing1	0.25S	3.75S
Flashing2	0.5S	0.5S
Flashing3	0.5S	1.5S

3. Communication

3.1 Communication instructions

3.1.1 Parallel RS485

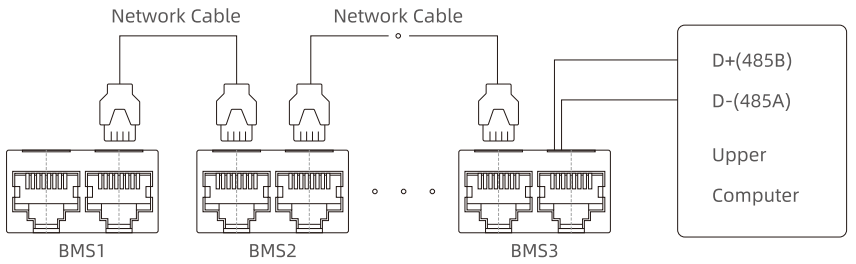
Equipped with dual RS485 interfaces, Can view battery information, The default baud rate is 9600bps. To communicate with monitoring equipment through RS485, Monitoring equipment as host, Polling data based on address, Address setting range is 2-15.

3.1.2 Independent CAN

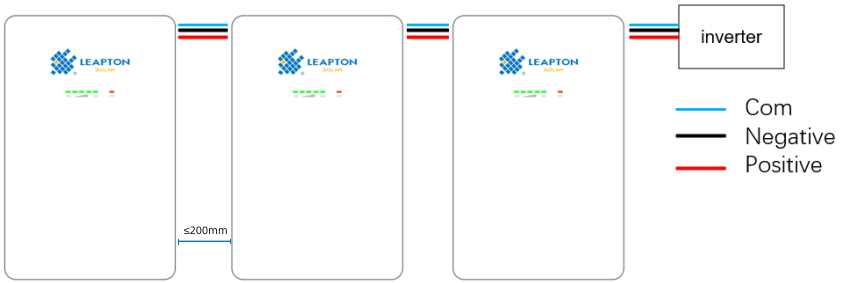
Independent Can interface, This interface is used for communication with inverters, When this battery is the main unit, Can summarize slave data and communicate with inverters.

3.2 Parallel wiring method

3.2.1 Parallel communication connection method



3.2.2 Positive and negative wire connection method



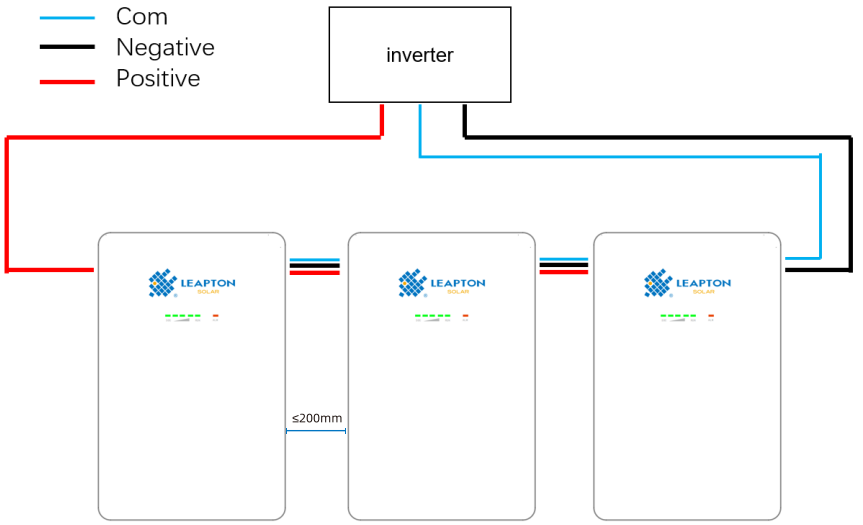
1. Using the parallel mode shown in the above diagram, you can choose either a 25mm² or 35mm² cable. Select the inverter power and set the maximum operating current according to the table below.

Wire gauge	Maximum current capacity of the cable	Maximum power
25mm²(standard accessories included with the shipment)	120A	5kw
35mm²	150A	6kw

Based on the actual inverter power selected and the chosen cable gauge, the maximum charge and discharge current limits should be set in the inverter's current limitation options, ensuring they are below the cable's maximum current capacity.

It is important to ensure that the system's operating current does not exceed the maximum current carrying capacity of the cable. Exceeding this limit may cause heating inside the battery and the cable, which could lead to fire hazards in severe cases.

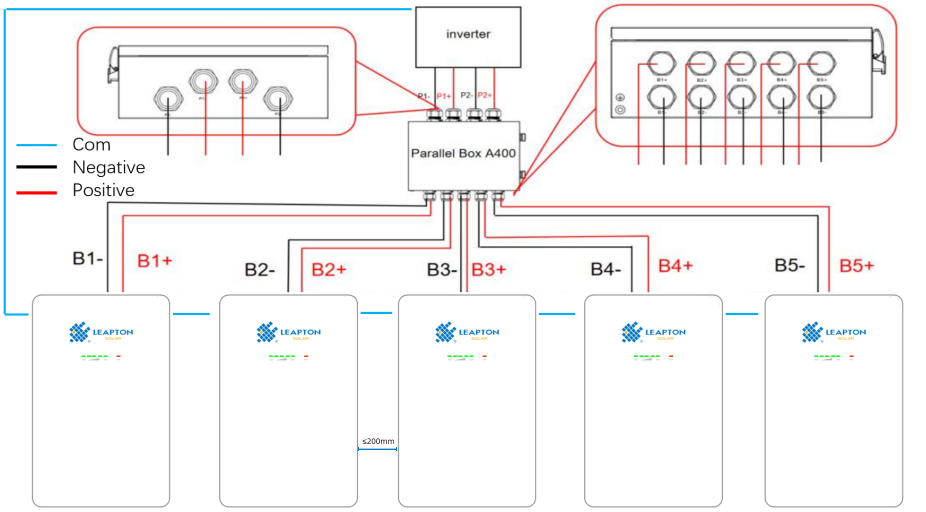
★Ensure before parallel connectioncircuit breaker In "OFF" state.
★Suggested installation spacing：≤200mm



In the parallel mode 2 shown in the diagram above, it is important to note that the system's maximum current is 200A, and the inverter power should not exceed 10kW. Based on the actual inverter power selected, you should set the maximum charge and discharge current limits in the inverter's current limitation options to be below 200A.

It is crucial to ensure that the system's operating current does not exceed the maximum current carrying capacity of the cable. Exceeding 200A may trigger overcurrent protection in a battery or cause heating inside the battery and the cable, which could lead to fire hazards in severe cases.

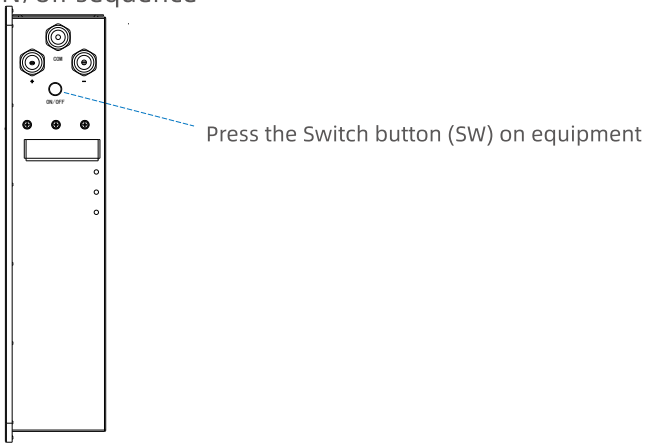
3.2.2 Positive and negative wire connection method



3. In the parallel mode 3 shown in the diagram above (suitable for scenarios with inverter power > 10kW), for high-power system battery parallel connections, the inverter current should be set to ≤ 100A * number of batteries. The maximum combined limit current for the system should be 400A.

★Ensure before parallel connectioncircuit breaker In "OFF" state.
★Suggested installation spacing：≤200mm

3.2.3:Power ON/off sequence



3.3 Dial switch settings

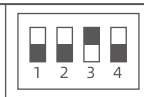
When batteries are used in parallel, Different batteries can be distinguished by setting the address through the dial switch on the BMS, Refer to the table below for the definition of BMS dial switch:

The default dialing address is' 1 'for the host, '2-15' is the slave machine;

Host Battery "RS232" communication interface and inverter connection;

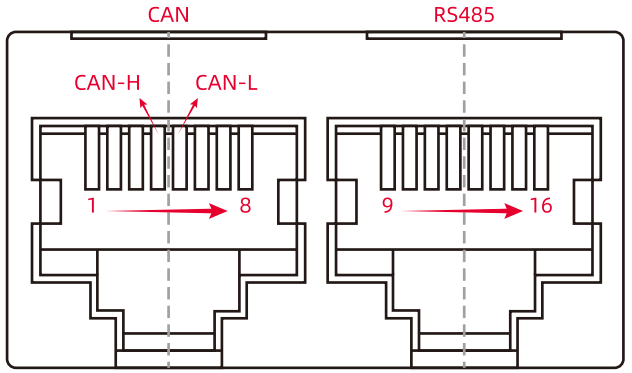
Parallel operation of two or more battery packs, Dial switch reference address “1+2”, “1+2+3”, By analogy with this method...



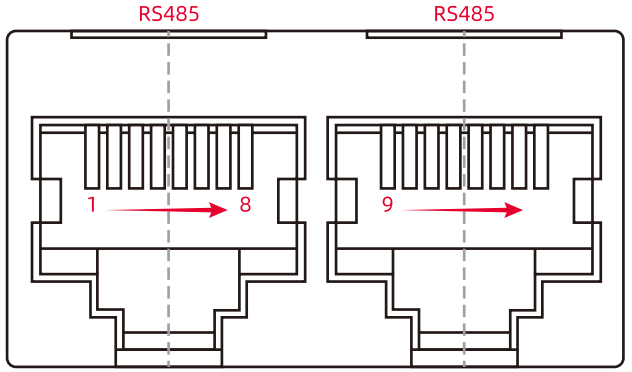
0		4		8		12	
1		5		9		13	
2		6		10		14	
3		7		11		15	

3.4 Interface definition

(1) Interface diagram



CAN and RS485 interfaces



Parallel communication port

RS485--Adopting 8P8C vertical RJ45 socket	
RJ45 pin	Definition Description
9, 16	RS485-B1
10, 15	RS485-A1
11, 14	GND
12, 13	NC

RS485 interface

RS485--Adopting 8P8C vertical RJ45 socket	
RJ45 pin	Definition Description
1, 8	RS485-B
2, 7	RS485-A
3, 6	GND
4, 5	NC
9, 16	RS485-B1
10, 15	RS485-A1
11, 14	GND
12, 13	NC

Parallel communication port

4. Battery Use Instructions

4.1 Charging

★ Charging current: cannot exceed the maximum charging current specified in this specification.

★ Charging voltage: shall not exceed the maximum charging voltage specified in this specification.

★ Charging temperature: The battery must be charged within the ambient temperature range specified in this specification.

★ The battery adopts constant current and constant pressure charging mode, and forbids reverse charging. If the positive electrode of the battery meets the negative electrode in the opposite, it will damage the battery.

4.2 Discharge

★ Discharge Current: the discharge current shall not exceed the maximum discharge current specified in this instruction. Excessive current discharge will reduce the battery capacity and cause the battery to heat up.

★ If the battery enters over discharge protection, it should be charged within 3 days. If it could not be charged in a timely manner, all connections on the battery must be disconnected.

4. 3 Discharge Temperature

★ Battery discharge must be within the temperature range specified in this specification Immediately charging after a short time of excessive discharge will not affect the use, but a long time of excessive discharge will lead to the loss of battery performance and battery function.

If the battery is not used for a long time, it may be in a certain discharge state due to its self-power consumption characteristics. In order to prevent the occurrence of over discharge, the battery should maintain a certain amount of electricity.

5. Notes For Product Use

5.1 Warnings

★ Do Not Put The Battery Into The Water Or Wet It.

★ Forbids Charging And Using The Battery Outside Our Specified Temperature Range; Do Not Store, Charge, And Use The Product Near The Fire Sources Or Heat Sources.

★ When The Battery Pack Emits An Odor Or Leakage, It Should Immediately Stop Using Or Stop Charging, And Move To The Open And Ventilated Place, Stay Away From The Fire Source, And Contact Us In Time.

★The Optimal Service Temperature Of Products Is 25 ± 5℃, If The Product Is Not In This Temperature Range During Use.

★ Load Use, Do Not Connect Positive And Negative Poles.

★ Do Not Short-circuit The Positive And Negative Electrodes Of The Battery Pack With A Metal Conductor.

★ Do Not Fire The Battery Pack Or Heat It.

★ It Is Strictly Prohibited To Dissect The Battery Pack, Puncture The Battery Pack With Nails Or Sharp Objects, Use Hammers Or Other External Forces, And Trample Or Fall The Battery Pack.

★Strictly Prohibited Putting Battery Packs In A Microwave Or Pressure Vessel.

5.2 Charging and Discharge

★ The Battery Must Be Charged Using An Appropriate Charger.

★ Do Not Use A Modified Or Damaged Charger.

★ During Charging And Use, Please Stop Charging And Using It Immediately.

5.3 Storage

★Store The Battery In A Cool, Dry, And Well-ventilated Place. If More Than Three Months Of Long Storage, It Is Recommended That You Should Charge The Battery Extra.

5.4 Processing

★ Different Countries Have Different Regulations, Please Handle According To The Local Regulations.

If There Is Any Fault Or Abnormality During Use, Please Contact Us And Do Not Remove The Battery Pack Without Permission.

LEAPTON Lithium Battery warranty

This limited warranty covers the LEAPTON Rechargeable Li-ion Battery models: EL-A05

This warranty does not include any accessories and tool kit items provided along with the product.

This warranty only covers the repair or replacement of a defective product. The repaired or replaced product will continue the original remaining warranty period. In either case, it shall not justify as a renewal of the warranty period.

The warranty continues for a certain period of years from the earlier of: 1.The date of installation of the Product; or 2.Six (6) months after the date the Product was manufactured.

Warranty conditions

1. The battery is intended to be used indoors only. Outdoor use will render the warranty oid.

2. The batteries must have not be contaminated with any foreign corrosive matter.

3. The warranty does not cover the damage due to neglect or abuse such as improper installation, freezing, fire, flooding, or any acts of nature.

4. The warranty does not cover surges or spikes from the inverter or charging device that could damage the battery.

5. If the battery or batteries were not installed correctly and not according to the manual with correct settings, it could result in damage. Incorrect installation and setup will invalidate the warranty.

6. Batteries must be provided with a refresh charge every 5-6 months, while in storage, prior to final installation.

7. Warranty will be void if the firm ware or BMS on the device has been deliberately tampered with to try and reset cycle values or any data for warranty evaluation purposes.

8. If it is found that the battery is being overloaded through large current draws outsides of the intended specification parameters (100Amps), it will lead to the warranty being void.

9. The warranty is non-transferable, and only applies to the original purchaser of the equipment.

10. The warranty will be void if the serial number has been tampered with or has been removed from the device.

11. The battery will not be considered effective unless it fails to deliver 50% or less of its rated capacity during claimed warranty period.

12. If the battery is interconnected or mixed with other non-LEAPTON batteries the warranty is void.

13. Warranty will be void if the installation or commissioning has not been performed by an LEAPTON approved installer.

14. In the event that the battery needs to be relocated it must be disconnected, moved and re-installed by an LEAPTON approved installer.

15. The operating temperature for the battery is designed to be 0 to 50 degrees Celsius, however, it is recommended to keep the battery below 25 degrees Celsius to maximise the design life and life cycle of the battery. The cycle life cannot be guaranteed if the battery is operated in temperatures exceeding 25 degrees Celsius.

Warranty Claim Process

In the event of a possible warranty claim, the following steps should be taken:

1. Claims under this warranty must be within 48 hours of a defect being discovered, notification must be provided to the approved re-seller of a claim.

2. The end user must submit the invoice for the procurement of the Product to the approved re-seller indicating date of delivery.

3. The reseller must send or arrange with the end user to send the battery to one of our service centres.

4. The service centre will evaluate the battery and validate if a claim is substantiated.

5. If a claim has been validated, repair and servicing of the battery will be performed.

6. Any replacement parts will become the property of LEAPTON.

7. It is for the client to arrange delivery and collection of the unit. If the client wishes to dispute to final evaluation decision, the product must be evaluated by a certified 3rd party testing company. You will bear the cost of any 3rd party evaluation service charge. (Unless your claim is proven to be valid, in which case LEAPTON will be responsible for the testing costs)

8.During the warranty period, the product should be used and operated in an environment where 95% of the conditions remain within 70% of the maximum temperature specified on the nameplate label.

If any testing of the Products capacity is required, the testing must occur in the following conditions:

a)The test is based on a single module.

b)The ambient temperature of the Battery Module must be [25℃±2℃].

c)The initial temperature of the battery modules pods must be [25℃±2℃].

d)50A constant current charge to 3.65V for cell, then switch to constant voltage (58.4Vdc)，charge until charge current declines to 5A.

e)Constant current (50Amps) discharge till all the cell voltages are below 2.70Vdc.

Warranty Form

Note: Signature or Seal stamp required.

LEAPTON shall have no obligation for unqualified application such as incorrect information or missing necessary information.

Product Model		Serial Number (S/N)	
Company Name			
Contact Person		Contact Number	
Contact email			
Company Address			
Replacement Deliver Address			
Name of End user			
Date of Installation			

Fault Description

Warranty Authorized signature!

The following information must provide after faulty battery been replaced Replacement Information.

Product Model		Serial Number(S/N)	
Replaced by		Replace Date	

Replacement Information Authorized signature: