

Lithium-ion Battery Pack

User's 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 battery 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).

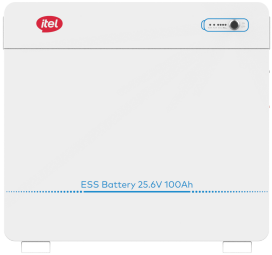
1.3 Specification and Performance

1.3.1 Parameters

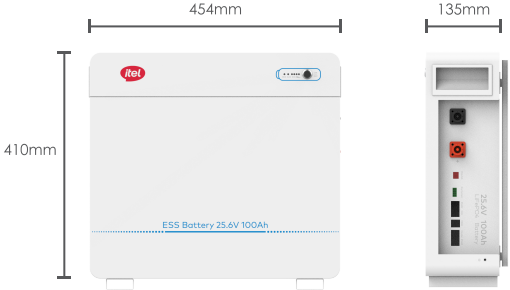
Project	Conventional Parameters
Battery Type	$LiFePO_4$
Model	IPW-25100
Compound Mode	1P8S
Rated Capacity	100Ah
Nominal Voltage	25.6V
Energy	2.56KWh
Operation Voltage Range	20~29.2V
Maximum Charging Persistent Current	100A
Maximum Discharge Persistent Current	100A
Recommend Charge Current	50A
Operating Temperature Range	Charge: 0~55℃, Discharge: -20~60℃
Storage Temperature Range	-10~50℃
Dimension (W*D*H)	454*410*135mm
Weight	25.8±3%KG
Live Capacity of Products Shipped	40% -60% Electricity Delivery
Packaging Material	Carton
Communication	RS485 / RS232 / CAN / Dry Contact Point

1.3.2 Interface Definition

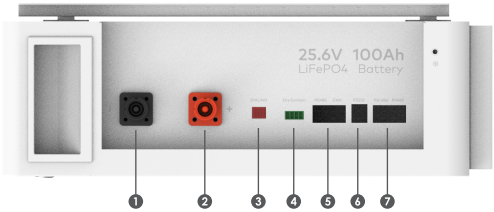
A) Battery Appearance



B) Battery Size



C) Panel Interface Refer To The Following Figure

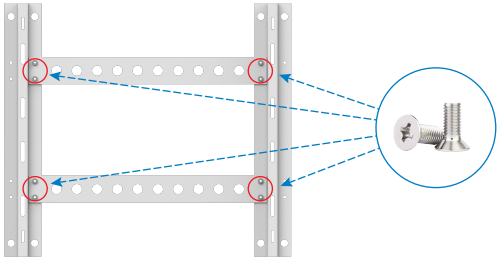


Number	Project	Description
1	Negative Terminal	A pair of terminals with the same function, one connected device is expanded in parallel with other batteries. For each individual module, each terminal can realize the charge and discharge function.
2	Positive Terminal	A pair of terminals with the same function, one connected device is expanded in parallel with other batteries. For each individual module, each terminal can realize the charge and discharge function.
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.

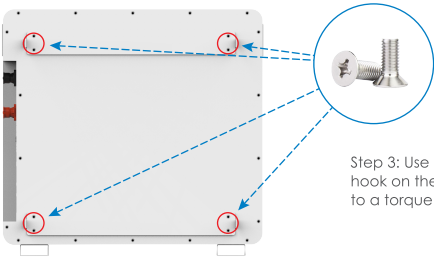
1.3.3 Wall-mounted Installation Instructions



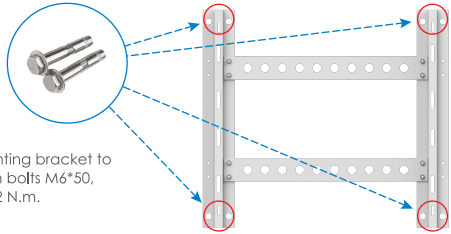
Step 1: Use the M5*10 screws from the accessories to mount Square tube onto the battery pack, tighten to a torque of 2.5 N.m.



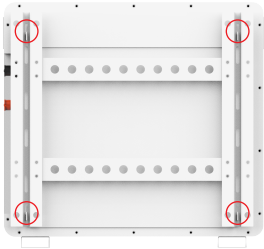
Step 2: Use the M4*8 screws from the accessories to mount support and cross bar, tighten to a torque of 1.5 N.m.



Step 3: Use the M4*8 screws Install the hook on the back of the battery, tighten to a torque of 1.5 N.m.

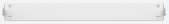


Step 4: Secure the mounting bracket to the wall using expansion bolts M6*50, tighten to a torque of 12 N.m.



Step 5: Secure battery to the mounting bracket.

1.3.4 Packing List

Project	Description
	Main unit *1
	Battery negative terminal cable *1
	Battery positive terminal cable *1
	Battery parallel communication cable *1
	Battery and inverter communication cable *1
	User manual *1
	Warranty card *1
	M6*50 expansion screw *8
	M4*8 screw *16
	M5*10 screw *4
	Wall-mounted bracket *2
	Hook bracket *2
	Supporting bracket *2
	Square pipe stand bracket *2

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 discharging
	Over current protection	OFF	ON	OFF	OFF	OFF	OFF	Stop discharging
Efficiency		OFF	ON	OFF	OFF	OFF	OFF	Stop charging and discharging

2.2 Status Indication

Stand By		Charging				Discharging			
Capacity indicator light		L4●	L3●	L2●	L1●	L4●	L3●	L2●	L1●
Quantity of electricity	0%~25%	OFF	OFF	OFF	Flashing 2	OFF	OFF	OFF	ON
	25%~50%	OFF	OFF	Flashing 2	ON	OFF	OFF	ON	ON
	50%~75%	OFF	Flashing 2	ON	ON	OFF	ON	ON	ON
	75%~100%	Flashing 2	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
Flashing 1	0.25S	3.75S
Flashing 2	0.5S	0.5S
Flashing 3	0.5S	1.5S

3. Communication

3.1 Communication Instructions

3.1.1 Parallel RS485

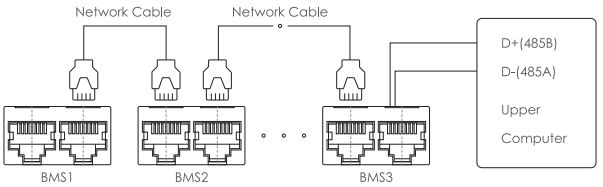
Equipped with dual RS485 interfaces, can view battery information, the default baud rate is 9600bps. To communicate with monitoring equipment through RS485, monitoring equipment as host, polling data based on address. Address setting range is 2-15.

3.1.2 Independent RS485

Independent RS485 interface, the default baud rate is 9600bps. This interface is used for communication with inverters. When this battery is the main unit, can summarize slave data and communicate with inverters.

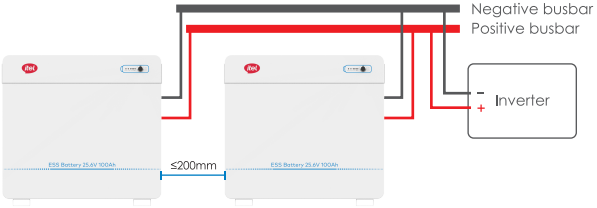
3.2 Parallel Wiring Method

3.2.1 Parallel Communication Connection Method

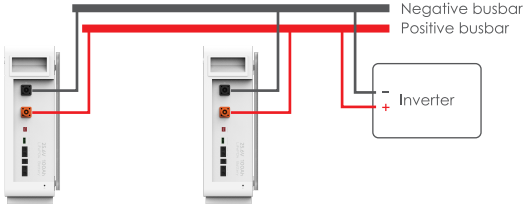


3.2.2 Positive and Negative Wire Connection Method

Front view

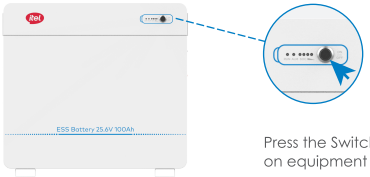


Side view



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

3.2.3 Power ON/OFF Sequence



Press the Switch button (SW)
on equipment

3.3 Dial Switch Settings

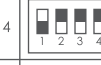
When batteries are used in parallel, different batteries can be distinguished by setting the address through the dial switch on the BMS, refer to the table below for the definition of BMS dial switch:

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

Host Battery "RS232" communication interface and inverter connection;

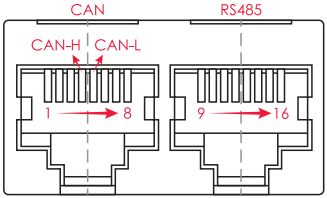
Parallel operation of two or more battery packs, dial switch reference address"1+2", "1+2+3", by analogy with this method...



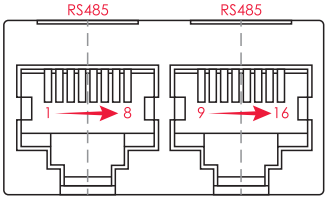
0		4		8		12	
1		5		9		13	
2		6		10		14	
3		7		11		15	

3.4 Interface Definition

(1) Interface Diagram



CAN and RS485 interfaces



Parallel communication port

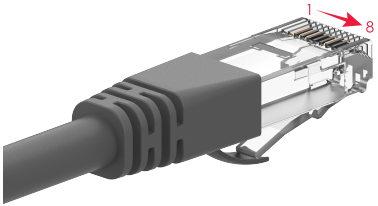
RS485--Adopting 8P8C vertical RJ45 socket	
RJ45 pin	Definition Description
9, 16	RS485-B1
10, 15	RS485-A1
11, 14	GND
12, 13	NC

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

(2) Communication Cable Interface Definition



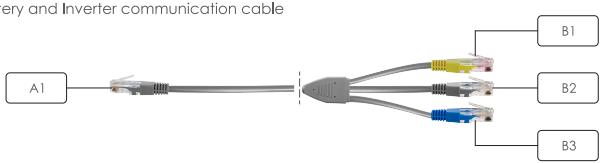
Battery parallel communication cable



A-Side		B-Side	
RJ45 pin	Definition Description	RJ45 pin	Definition Description
1	RS485-B	1	RS485-B
2	RS485-A	2	RS485-A
3	GND	3	GND
4	NC	4	NC
5	NC	5	NC
6	GND	6	GND
7	RS485-A	7	RS485-A
8	RS485-B	8	RS485-B

Battery parallel communication port

Battery and Inverter communication cable



A1			B1	
RJ45 pin	Definition Description			RJ45 pin
	RS485 Communication	CAN Communication	RS485 / CAN Communication	
1	RS485-B	NC	RS485-B	3
2	RS485-A	GND	RS485-A	5
3	GND	NC	GND	8
4	NC	CAN_H	CAN_H	6
5	NC	CAN_L	CAN_L	7

Battery and Inverter communication port - A1-B1

A1			B2		
RJ45 pin	Definition Description				RJ45 pin
	RS485 Communication	CAN Communication	RS485 Communication	CAN Communication	
1	RS485-B	NC	RS485-B	NC	1
2	RS485-A	GND	RS485-A	GND	2
3	GND	NC	GND	NC	3
4	NC	CAN_H	NC	CAN_H	4
5	NC	CAN_L	NC	CAN_L	5
6	GND	NC	GND	NC	6
7	RS485-A	NC	RS485-A	NC	7
8	RS485-B	NC	RS485-B	NC	8

Battery and Inverter communication port - A1-B2

A1			B3	
RJ45 pin	Definition Description			RJ45 pin
	RS485 Communication	CAN Communication	RS485 / CAN Communication	
4	NC	CAN_H	CAN_H	4
5	NC	CAN_L	CAN_L	3
7	RS485-A	NC	RS485-A	6
8	RS485-B	NC	RS485-B	5

Battery and Inverter communication port - A1-B3

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 Discharging

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

★ If the battery enters over discharging 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 Discharging Temperature

★ Battery discharging must be within the temperature range specified in this specification Immediately charging after a short time of excessive discharging will not affect the use, but a long time of excessive discharging 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 discharging state due to its self-power consumption characteristics. In order to prevent the occurrence of over discharging, 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 Discharging

★ 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.

6. Electrical performance parameters of the whole series of products

Setting	IPL-51100A	IPW-51100	IPW-25100	IPL-51200X	IPL-25200X
Charger source priority	SNU	SNU	SNU	SNU	SNU
Maximum charging current (Solar and Utility)	50A*n	50A*n	50A*n	100A*n	100A*n
Maximum utility charging current	50A*n	50A*n	50A*n	100A*n	100A*n
Bulk charging voltage (C.V voltage)	57.6V	57.6V	28.8V	57.6V	28.8V
Floating charging voltage	55.2V	55.2V	27.6V	55.2V	27.6V
Low DC cut off battery voltage	47V	47V	23.5V	47V	23.5V
Battery stop discharging voltage (when grid is available)	47V	47V	23.5V	47V	23.5V
Battery stop charging voltage (when grid is available)	57.6V	57.6V	28.8V	57.6V	28.8V

★"n" means the number of battery in parallel.

itel Lithium Battery warranty

This limited warranty covers the itel Rechargeable Li-ion Battery models: IPW-25100

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-itel batteries the warranty is void.

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

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

15. A standard 5-year warranty is provided for the BMS and trip switch. The warranty of the trip switch does not cover excessive manual use or overuse of the trip switch. The trip switch is intended to protect the Lithium Battery.

16. 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 itel.

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 itel will be responsible for the testing costs)

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.





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