



BPE[®]
BADGER POWER ELECTRONICS
www.BadgerPowerElectronics.com

BPE PowerDepot 5.22kWh
LiFePO4 Battery






User Manual

1 Safety Information

General

Please read the manual and all safety precautions carefully to ensure that the system is installed in a safe manner.

The "DANGER", "WARNING", and "NOTICE" icons in this document are meant to alert you to certain precautions whilst installing the battery however, they do not cover all the safety precautions related to this battery so ensure you always follow all local regulations.

 Danger	DANGER indicates a hazardous situation which, if not avoided, could result in serious injury or fire.
 Warning	WARNING indicates a hazardous situation which, if not avoided, will result in property damage or void warranty.
 Notice	NOTICE indicates additional information which will assist with the installation of this battery.

Only qualified electricians should install this battery in accordance with the instructions set out in the manual.

Do not attempt to modify or repair the batteries in a way they were not intended to be used.







Danger

- Do not install the battery near any explosive or flammable materials
- Do not touch the battery while it is operating as it may be hot
- Do not touch the battery terminals
- Do not short circuit the battery
- Do not rest any heavy objects on top of the battery only BPE PowerDepot 5.22kWh batteries can be stacked on one another

1.3 Electrical Safety.

Battery Symbols Explained

There are multiple symbols located on the battery that refer to a variety of safety and operation matters. Please make sure you have a full understanding of them before installation.

	Electrical danger	There is a danger of electric shock when handling the battery..
	Earth connector	Earth connection.
	DC positive and negative terminals	Identifies positive and negative terminals on the battery.
	CE mark	The product meets CE certification.
	WEEE	Do not dispose of the battery to landfill.
	Recycle	The battery can be recycled.

Electrical Safety

Danger

- Before installation, ensure that the equipment is intact and in good condition. Otherwise, electric shocks or fire may occur.
- Do not connect or disconnect power cables when battery is operating. This may cause electric arcing or sparks which may lead to fire or personal injury.
- Do not connect another manufacturers batteries in parallel with BPE batteries.
- Do not connect battery to AC directly.
- Do not reverse the polarity of the cables when connecting to an inverter.
- Do not connect battery with PV wiring directly.
- Do not connect batteries in series.
- Do not connect the battery to a non-approved inverter manufacturer.
- Do not create short circuits with the external connection.
- Make sure the grid is isolated and the battery is powered off before maintaining.
- Make sure the communication cable is connected correctly before operation.

Warning

- Charge the battery at least every six months.
- Charge the battery within maximum of 10 days after the battery has been fully discharged.
- Make sure battery cables are installed correctly.
- When the battery is being installed or repaired, make sure the battery is powered off and using a multimeter to make sure there is no voltage in the positive and negative terminals.

Notice

- Please use dedicated insulated tools for install and maintenance.
- Please make sure all batteries are powered off when they are first connected in parallel.
- Please check the LED light sequence when powering on the battery.
- Please make sure communication cable is securely installed between the battery and inverter.

Environmental Safety

Warning

- Ensure that the equipment is installed in a dry and well-ventilated area.
- The installation site must be away from direct sunlight and rain.
- The installation site must be far away from sources of fire or explosions.
- The installation site must be far away from water sources such as taps, sewer pipes, and sprinklers to prevent water damage.
- Do not expose the equipment to flammable or explosive gases.
- The operation and service life of the battery depends on the operating temperature. Operate the battery at a temperature equal to or better than the ambient temperature. The recommended operating temperature range is from 0°C to 30°C.

1.4 Transportation Safety

Warning

- The batteries are certified under UN38.3 and CE.
- The batteries are identified as class 9 dangerous goods.
- Ensure the packaging does not get damaged by ater, dropping or getting crushed.

2 System Information

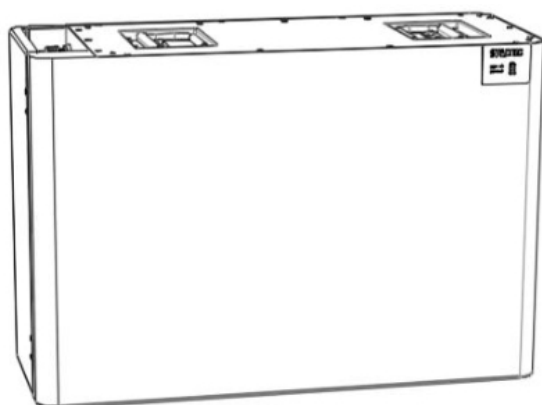
The PowerDepot 5.22kWh LiFePO4 battery is an indoor stackable battery system that is designed to fit perfectly in any home. With an intelligent integrated BMS, our 5.22kWh battery is compatible with the BPE PowerDepot A1 EES and a wide variety of other inverter manufacturers. The battery is easily stackable, this allows the system to scale between 5.22kWh and 20.88kWh, providing you with the capability to power your entire home for hours at a time.

2.2 Specification

2.2.1 System Parameters

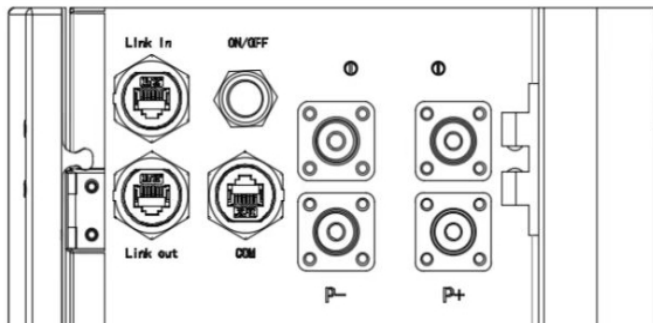
Product type	Focus-L1			
Cell Technology	Li-ion(LFP)			
Battery System Capacity(kWh)	5.22	10.44	15.66	20.88
Battery System Voltage(Vdc)	51.2			
Battery Module Name	STE-BSG-5220			
Battery Module Quantity(pcs)	1	2	3	4
Battery Module Capacity(kWh)	5.22			
Battery Module Voltage(Vdc)	51.2			
Battery Cell Capacity(Ah)	102			
Battery Module Cell Quantity(pcs)	16			
Battery System Charge Upper Voltage(Vdc)	56.2			
Battery System Charge Current(Amps.Normal)	50			
Battery System Charge Current(Amps.Max)	100			
Battery System Discharge lower voltage(Vdc)	45.6			
Battery System Discharge Current(Amps.Normal)	50			
Battery System Discharge Current(Amps.Max)	100			
Depth of Discharge(%)	90%			
Dimension(W*D*H mm)	515*200*512	515*200*862	515*200*1212	515*200*1562
Communication	RS232/485/CAN			
Protection Class	IP54			
Weight(kg)	50	95	140	185
Operation Life(Years)	15+			
Operation Temperature(°C)	-10-50			
Storage Temperature(°C)	-20-60			
Altitude(M)	<2000			
Product Certificate	IEC62619\IEC61000\IEC62040\CE			
Transfer Certificate	UN38.3			
1) Battery Cover Dimensions (W*D*Hmm)	515*200*76;			
2) Battery Module Dimensions (W*D*Hmm)	515*200*350;			
3) Battery Bottom base Dimensions (W*D*Hmm)	515*200*86			

2.2.2 Battery Module (BPE-PD-5.22kWh)



Product Type	STE-BSG-5220
Cell Technology	Li-iron (LFP)
Battery Module Capacity(kWh)	5.22
Battery Module Voltage(Vdc)	51.2
Battery Module Capacity(Ah)	102
Battery Module Serial Cell Quantity (pcs)	16
Battery Cell Voltage(Vdc)	3.2
Battery Cell Capacity(AH)	102
Dimension (W*D*H, mm)	515*350*200
Weight (kg)	45
Operation Life(years)	15+
Operation Temperature	0-50°C
Storage Temperature	-20-60°C
Transportation Certificate	UN38.3

Connection Area



ON/OFF

1. ON

For a single BPE 5.22kWh battery, press and hold (for 5 seconds) the ON/OFF button. The Normal LED will light up and begin to operate normally. The six green LED bars represent the battery's SOC.

For multiple BPE 5.22kWh batteries in parallel, press and hold (for 5 seconds) the ON/OFF button of MASTER battery (The battery connected to the inverter with the communication cable). The Normal LED will light up and this battery will be assigned as the master battery. The other batteries in the system will automatically be programmed and assign IDs as Slave batteries.

2. OFF

Press and hold the ON/OFF button on the Master battery (which is connected to the inverter) for more than 3s. The LED will flash on the front panel and then release the button, the master battery will shut down as well as all of the slave batteries.

COM Port

CAN/RS485/RS232 Communication Terminal (RJ45 port):

For communicating with the inverter and ensuring your battery operates nominally; please connect the Comm Port on the master battery to the BMS port on the inverter.

Use this table for creating your own communication cable with regular Cat5/6 and a crimping tool:

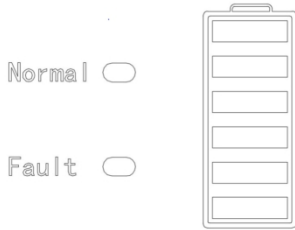
PIN	Definition
Pin 1	RS485-B (to PCS, reserved)
Pin 2	RS485-A (to PCS, reserved)
Pin 3	GND_2
Pin 4	CANH (toPCS)
Pin 5	CANL (toPCS)
Pin 6	RS232_TX
Pin 7	RS232_RX
Pin 8	RS232_GND

Link in/Link out

Link in/Link out are used for the communication between battery packs. If you have more than one battery in your system, use a communication cable to exit the **Master Link Out** port and connect it to the next **Slave Link In** port. Continue this pattern of Link in/Link out with the additional batteries until the final battery just has a Link In cable running to it. (Reference diagrams on page 10.

2.2.3 LED Indicator Definition

STELTEC



LED Indicators Instructions

Status	Normal	Fault	Battery Level Indicator							Description	
	L8	L7	L6	L5	L4	L3	L2	L1			
Shut down	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	All OFF	
Standby	Flashing	OFF	According to the battery level							Indicates Standby	
Charging	Normal	Light	OFF	According to the battery level							The highest capacity indicator LED flashing
	Full Charged	Light	OFF	Light	Light	Light	Light	Light	Light	Stop charging, battery SOC at limit	
	Protection	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging	
Discharge	Normal	Flashing	OFF	According to the battery level							
	UVP	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging	
	Protection	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharge	
Fault	OFF	Light	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging and Discharge	

3 Installation

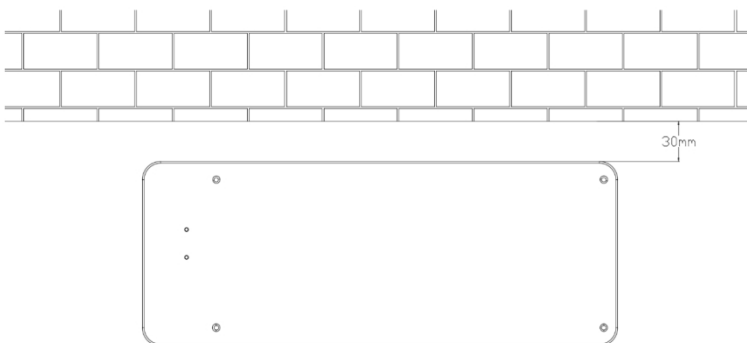
3.1 Installation Requirements

- It is recommended to install the battery in an indoor environment.
- Do not expose the battery to direct sunlight.
- Only mount battery on a stable floor surface.
- Do not stack more than four BPE 5.22kWh on top of one another.

3.2 Installation

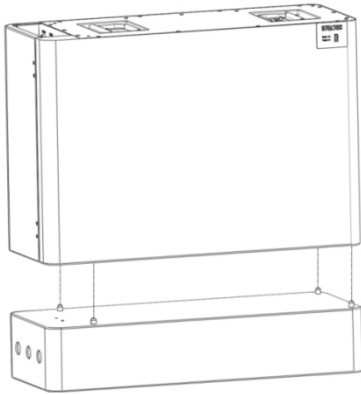
Step 1

Securely place the battery base near a wall, the distance between the base and the wall should be 30mm. Ensure that the base is level before proceeding.



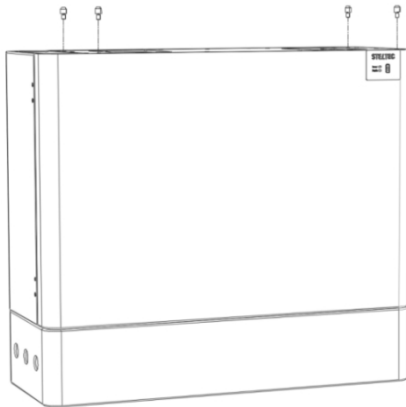
Step 2

Using the four included dowel pins, insert them into the corners by screwing them into the base with a screw driver. Next, place the battery on top of the base; ensuring the battery securely sits on top of the dowels.



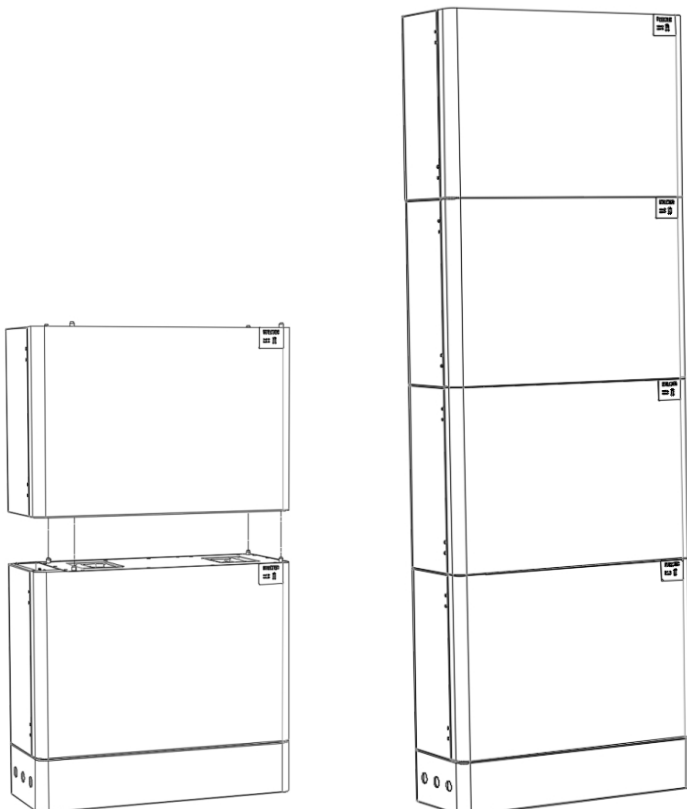
Step 3

If you're installing more than one 5.22kWh battery, insert four more dowel pins on top of the bottom battery.



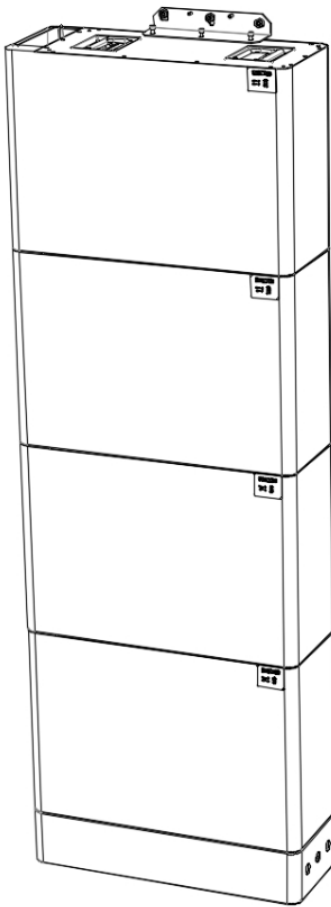
Step 4

Place the second battery pack on top of the first pack. Repeat this process for all batteries as required.



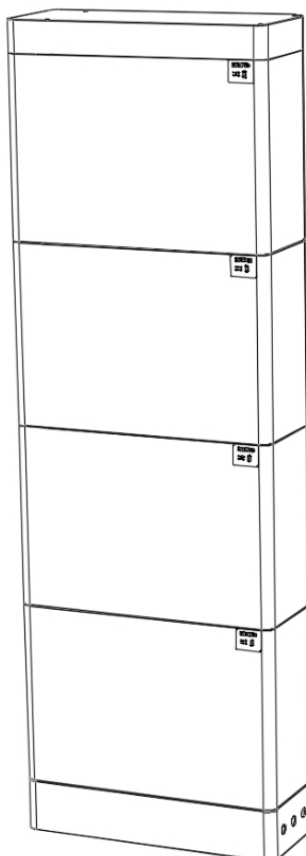
Step 5

Fixed the battery with the wall using a L shaped metal parts and expansion bolts.



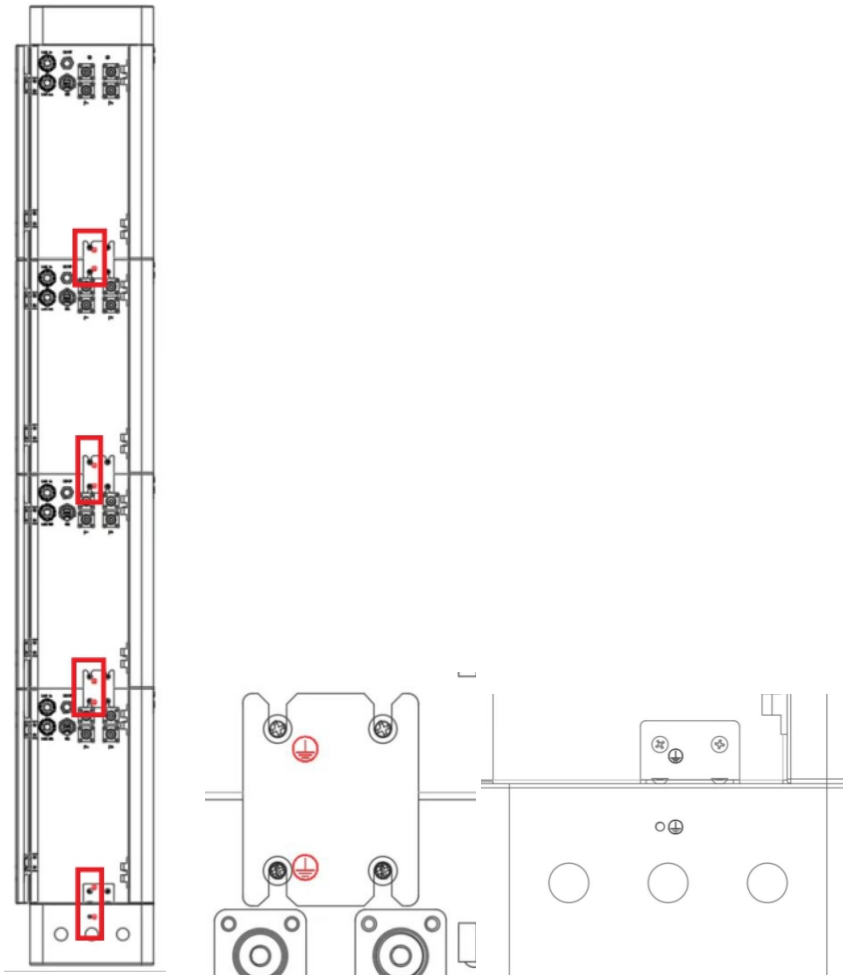
Step 6

Install the top cover onto the top most battery pack.



Step 7

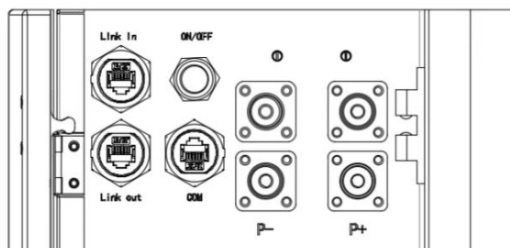
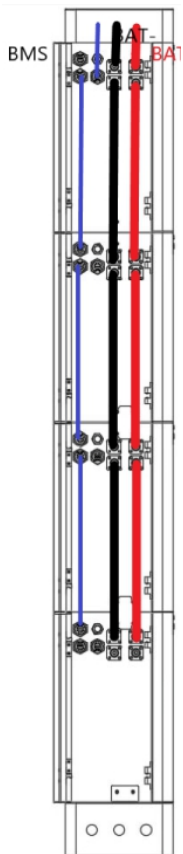
Ensure the batteries are all connected to the PE terminal by installing the included square brackets between each battery pack. The bottom battery pack will attach to the base plate with an L shaped bracket.



Step 8

Connect all power and communication cables between the battery packs.

Danger: Do not reverse the polarity on any of the battery power cables.



- Connect the master battery pack positive and negative terminals (P+ and P-) to the inverter.
- The blue cable is the communication for the batteries in parallel, this goes from Link in to Link out
- Connect the COM port of the BMS port on the inverter.

4 Maintenance

- Recharge Requirements During Storage

Battery should be stored in an environment with temperature range between -10°C ~ $+45^{\circ}\text{C}$ and maintained regularly according to following table with 0.5C (51A) current until 40% SOC after a long period of storage.

Storage Environment Temperature	Relative Humidity of Storage Environment	Storage Time	SOC
Below -10°C	/	Prohibited	/
$-10\sim 25^{\circ}\text{C}$	5%~70%	≤ 12 months	$30\% \leq \text{SOC} \leq 60\%$
$25\sim 35^{\circ}\text{C}$	5%~70%	≤ 6 months	$30\% \leq \text{SOC} \leq 60\%$
$35\sim 45^{\circ}\text{C}$	5%~70%	≤ 3 months	$30\% \leq \text{SOC} \leq 60\%$
Above 45°C	/	Prohibited	/