USER MANUAL

BPE PowerDepot 2.56kWh Wall Mounted Lithium Battery

BPE®

BADGER POWER ELECTRONICS

www.BadgerPowerElectronics.com

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1 - SAFETY INFORMATION

1.1 General Safety

Please fully read the safety precautions in this document and observe all the safety instructions on the equipment.

The “DANGER”, “WARNING”, and “NOTICE” statements in this document do not cover all the safety instructions. They are only supplements to the safety instructions.

In order to ensure human safety and equipment functionality, use the appropriate symbols below to identify any potential issues with the equipment. You must fully understand and comply with the information to avoid personal injury and property damage.

DANGER indicates a hazardous situation which must be addressed.

WARNING indicates a hazardous situation which, if not resolved could result in damage or void the warranty.

NOTICE indicates normal operating situation which some functions may need addressing in order to ensure optimal battery use.

Follow local laws and regulations when installing, operating or maintaining the equipment. The safety instructions in this document are only supplements to local laws and regulations.

1.2 Personal Safety

Personal Requirements

Personnel who plan to install or maintain battery equipment must be trained, have understood all the necessary safety precautions and be able to perform all operations correctly.

Only qualified professionals or trained personnel are allowed to install, operate and maintain the equipment.

Personal Safety

- » Do not install the battery in a location accessible to children or animals.
- » Do not touch the battery when charging as it may be hot.
- » Do not touch the battery terminals.
- » Do not stand, lean or sit on the battery.

1.3 Electrical Safety

Battery Symbols

There are some electrical symbols on the battery which relate to electrical safety. Please make sure you have fully understood them before installation.

	Electrical Danger	Voltage exists when the battery is powered on. Only qualified engineers are permitted to operate.
	Earth Connector	Earth Connection
	DC Positive and Negative Connectors	Identify positive and negative connectors of DC power source.
	CE mark	The product meets CE certification.
	WEEE Tag	Battery must be disposed of appropriately.
	Recycle	Battery can be recycled

Electrical Safety

DANGER

- Before installation, ensure that the equipment is intact or electric shock/fire may occur.
- Do not connect or disconnect power cables when the battery is switched on as this may cause electric arcs and sparks which can lead to fire or personal injury.
- Before connecting a power cable, check the positive and negative connectors are correct.
- Do not parallel connect different types of batteries.
- Do not connect the battery with AC power directly.
- Do not connect the battery with PV wiring directly.
- Do not connect battery to a faulty or incompatible inverter or charger.
- Do not create short circuits with the external connection.
- Make sure to power-off the battery before any maintenance.
- Make sure the earth cable is connected correctly before operation.

WARNING

- Recharge the battery every six months.
- Recharge battery within 10 days after the battery is fully discharged.
- Please engage greater than or equal to two batteries when maximum charge current is more than 50A.
- Make sure the battery cables are installed correctly.
- Use a meter to ensure there is no voltage between positive and negative terminals after the battery is switched off during installation or maintenance.

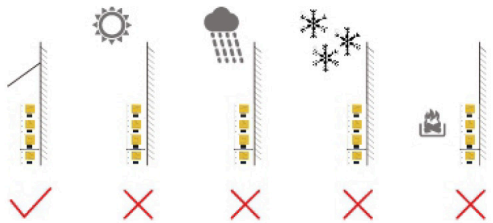
NOTICE

- Please use appropriate insulated tools for install and maintenance.
- Please make sure all batteries are switched off when connected in parallel.
- Please check the LED light sequence when the battery is switched on.
- Please make sure the BMS communication cable is connected correctly between the battery and inverter.
- Please make sure ADDS dip switch settings are correct for single or multiple batteries.
- Please check the inverter alarm or SOC reading to ensure there is BMS communication with inverter.

1.4 Environmental Safety

WARNING

- Ensure that the equipment is installed in a dry and well-ventilated environment.
- The battery installation must be away from direct sunlight and rain.
- The installation position must be away from flammable materials.
- The installation position must be away from water sources such as taps, sewer pipes and sprinklers to prevent water seepage.
- Do not expose the equipment to flammable or explosive gases or smoke. Do not operate the equipment in such environments.
- The operation and service life of the battery is dependent on the operating temperature. Operate the battery at a temperature equal to or better than the ambient temperature. The recommended operating temperature ranges from 0°C to 30°C.



2 - PRODUCT INFORMATION

2.1 Battery Overview

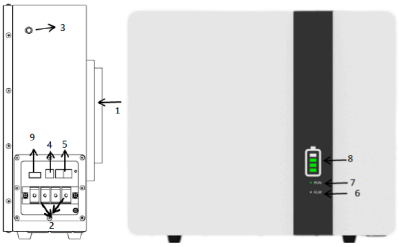
The BPE 2.56kWh Wall Mounted battery is a lithium battery pack which consists of long life LiFePO4 battery cells and integrated BMS. It can store and release electric energy based on the requirements of the inverter.

Features

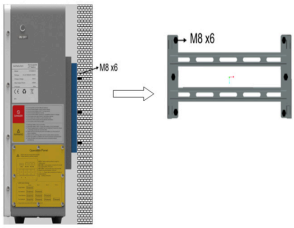
- LiFePO4 cell technology
- 6000 cycles @0.5C conditions
- Maximum 1C charge and discharge capability
- Wall mounted IP54 grade protection
- Maximum 4 batteries can be connected in parallel
- Protective and active BMS allows greater reliability and control
- Fully recyclable
- Compact

2.2 Appearance

2.3 Front Panel



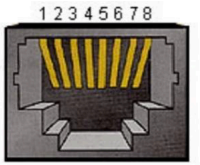
1. Wall mount - Please mount bracket on the wall with six M8 bolts. Then lift the battery and attach to the bracket.



2. Wiring block - 2P (1P positive and 1P negative) power interface, printed by "+" and "-", front mounted wiring method, positive and negative terminals are insulated by thermoplastic polyester (PBT) insulating sheets.
3. Switch - BMS switch, when it is turned off, the BMS can be put to sleep and the charge and discharge MOS transistors will be turned off at the same time; normal operation will be restored after it is turned on.
   Note: Please do not turn on the system switch when the product is not in use to avoid self-consumption of the battery power.
   Version 1:CAN2.0B/RS485
4. CAN2.0B COMM to inverter - BMS supports the functionality of CAN communication, baud rate of 500K. CAN communication interface adopts 8P8C network cable interface. It can communicate with the inverter or CAN TEST through CAN interface. When the battery pack is connected, RS485 communication is connected to the data. The status and information of the battery pack can be uploaded to PCS through CAN communication.

CAN communication interface definition:

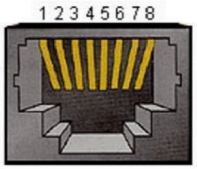
Pins	Definition
1、2、7、8	NC
4	CAN-H
5	CAN-L
3、6	GND



5. RS485 COMM to parallel battery - The BMS has RS485 communication for multiple battery pack connections and the baud rate is 19200bps. RS485 communication interface adopts 8P8C network cable interface.

RS485 pin interface definition (RJ45-8P8C)

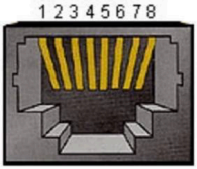
Pins	Definitions
1、8	RS485-B
2、7	RS485-A
3、6	GND
4、5	NC



Version 2: RS485/RS485

6. RS485 COMM to inverter - The BMS has RS485 communication for multiple battery pack connections and the baud rate is 9600bps. RS485 communication interface adopts 8P8C network cable interface. RS485 pin interface definition (RJ45-8P8C)

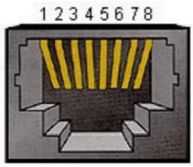
Pins	Definitions
1、2、7、8	NC
4	RS485-A
5	RS485-B
3、6	GND

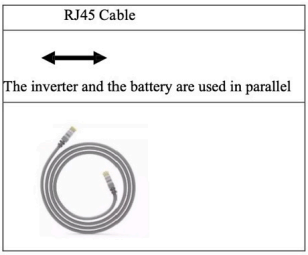


7. RS485 COMM to parallel battery - The BMS has RS485 communication for multiple battery pack connections and the baud rate is 9600bps. RS485 communication interface adopts 8P8C network cable interface.

RS485 pin interface definition (RJ45-8P8C)

Pins	Definitions
1、8	RS485-B
2、7	RS485-A
3、6	GND
4、5	NC





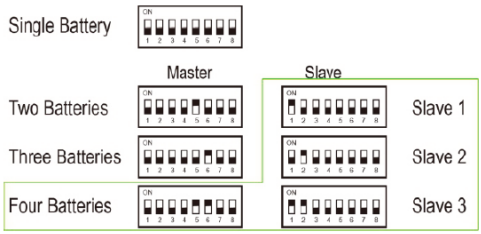
8. LED Indicators

System	Status	RUN	ALM	SOC				Definition
On	Sleeping	Off	Off	Off	Off	Off	Off	All Off
Standby	Normal	On	Off	SOC Indicators				Standby
Charging	Normal	On	Off	SOC Indicators				Flashing
	OC ALM	On	Flashing	SOC Indicators				Flashing
	OV ALM	On	Off	SOC Indicators				
	OT ALM	On	Flashing	SOC Indicators				
Discharging	Normal	Flashing	Off	SOC Indicators				SOC Indicators
	Alarm	Flashing	Flashing	SOC Indicators				
	All Protections	Off	On	Off	Off	Off	Off	Sleep Mode
	UV Protections	Off	Off	Off	Off	Off	Off	Stop Discharging

9. Red alarm indicator with an audible alarm signals a fault.
10. SOC indicator, four green LED lights to display the real-time SOC capacity of the lithium battery pack.

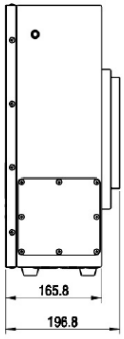
Status	Charge				Discharge			
SOC	L4	L3	L2	L1	L4	L3	L2	L1
0 - 25%	Off	Off	Off	Flashing	Off	Off	Off	On
25 - 50%	Off	Off	Flashing	On	Off	Off	On	On
50 - 75%	Off	Flashing	On	On	Off	On	On	On
>75%	Flashing	On	On	On	On	On	On	On
RUN	On				Flashing			

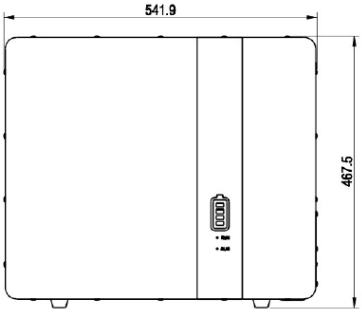
11. DIP Switches - Parallel DIP switch definition: For multi-battery communication when the battery packs are connected in parallel, use the DIP switch to distinguish the different battery pack addresses; the battery address can be set by the DIP switch on the panel below.



For example, green frame is the settings for 4 batteries.

2.4 Dimensions





2.5 Capacity Options

The battery can be connected in parallel for increasing power(kW) and energy(kWh).

WARNING

» The maximum power (kW) is limited by the main cables from master battery to inverter.

» Maximum number of batteries that can communicate in parallel is 4.

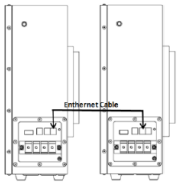
FOR EXAMPLE - One Pack is 2.56kWh

Two packs - 5.12kWh

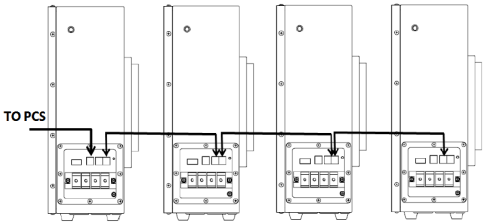
Four packs - 10.24kWh

2.6 Parallel Communication

When multiple battery packs are connected in parallel, the RS485 interface is used as the parallel communication interface. The master battery can manage all of the paralleled slave batteries through the RS485 communication.
Two batteries RS485 parallel connection 1:



More than two batteries RS485 parallel connection 2:



2.7 Recommended Settings

Lithium batteries function differently to lead-acid batteries, therefore the device in which you connect to the battery for charging and discharging, such as an inverter, MPPT charger controller or UPS should implement the recommended settings below.

Setting	BPE-LFP-2.56-ID
Max. Charging Voltage	57.6V
Floating Charging Voltage	58.4V
Max. Charging Current	35A
Max. Discharging Current	35A
Cut-off Voltage	45V

3 - ATTENTION

- Before using the battery pack, please read the manual carefully to understand the usage and precautions;
- Non-professionals shall not disassemble the battery without authorisation;
- During usage or storage, if you notice any abnormal temperature, discoloration, deformation or other abnormalities in the battery, please stop using the battery;
- The working temperature of the battery is -10~55°C;
- The storage temperature of the battery is -10~35°C. Please place the battery in a dry and cool environment.
- If the battery is not to be used for a long period, the battery pack needs to be charged to more than 80%, turn off the power switch, and store it in a ventilated and dry environment.

4 - SPECIFICATIONS

Model	BPE-LFP-2.56-ID
Usable Capacity	2.56kWh
Voltage	51.2V
Charge Voltage	57.6V
Discharge Voltage Range	45 - 57.6V
Max. Charging Current	35
Rated Charging Current	35
Max. Discharging Current	35
Rated Discharging Current	35
Max. Output Power	5000W
Rated Output Power	4350W
DOD	85%
Modules Connection	1-4 in parallel
Communication	CAN or RS485
Cycle Life	> 6000
Working Temp. Range	Charge: 0°C to +55°C Discharge: -10°C to +55°C
Storage Temperature	-10°C - +35°C
Net Weight (kg)	52kg
Gross Weight (kg)	55kg
Product Dimension (mm)	542 x 468 x 197mm
Package Dimension (mm)	595 x 522 x 252mm

4.1 - Packing list

No.	Item	Description	Quantity
1	Battery Pack	2.56kWh Battery pack	1
2	Power Cables	2m Power cables to Inverter	2
3	Earth Cable	Earth cable	1
4	Comms Cable	2m Ethernet cable	1
5	Wall Bracket	Wall Bracket and fixings	1
6	Parallel Cables	Optional	1

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