EnergyPak 5
User Manual

This manual applies to the product: EnergyPak 5
All specifications and descriptions contained in this document are verified to be accurate at the time of printing. However, we reserve the right to make product modifications at any time. The images provided in this document are for demonstration purposes only. Depending on product version, details may appear slightly different.

ELECTRONIC DEVICE: DO NOT THROW AWAY
Proper disposal of batteries is required. Refer to your local supplier for disposal requirements.

MADE IN CHINA

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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE IMPORTANT SAFETY INSTRUCTIONS

EnergyPak 5 installation and service require knowledge of high voltage electricity and should only be performed by qualified Installers. Microgreen is not responsible for injuries or property damage caused by unqualified personnel trying to repair or failing to follow these instructions correctly. These warnings and cautions must be followed when using the battery.

Symbols In This Document

This manual uses the following symbols to highlight important information:


WARNING

Indicates a hazardous situation which. If not avoided, could result in death or serious injury.


CAUTION

Indicates that damage or injury may occur. Situation which if not avoided may cause minor injury and/or property damage.


NOTE

Indicates a risk of possible damage to the product.

WARNING INFORMATION:

- Do not place flammable and explosive materials near the product.
- Do not place any objects on the product during operation.
- Electrical installation must comply with local and national electrical safety standards.
- Wear rubber gloves and protective clothing (protective glasses and boots) when working on high-voltage / high-current systems (such as PCS and battery systems).
- Do not open the product cover, there is a risk of electric shock, and there are no service parts inside. Request service from qualified and approved service technicians.

CAUTION INFORMATION:

- The unit is heavy. Make sure that there are at least two people to handle the package.
- Do not use damaged, cracked or frayed cables and connectors.
- Make sure that the product is properly grounded to prevent possible electric shock.
- If the battery is defective, cracked, broken or otherwise damaged or inoperable, please do not use.
- This product should not come into contact with water (drip or splash), and should not place objects filled with liquids such as vases on this product.
- To prevent the risk of fire or electric shock, do not expose this product to rain or moisture.
- Keep out of reach of children or animals.
- Products must be handled in accordance with local regulations.
- Do not discard the battery in a fire. The battery may explode.
- Do not open or damage the battery. The electrolyte released may be toxic and harmful to the skin and eyes.
- Batteries are in danger of electric shock and large current discharge during short circuit. Pay attention to the following when installing the battery:
  1. Remove watches, rings or other metal objects.
  2. Use tools with insulated handles.
  3. Wear insulated gloves and boots.
  4. Do not place tools or metal parts on top of the battery.

REMARK INFORMATION:

- Never use any solvents, abrasives or corrosive substances to clean this product.
- Do not store or place any objects on the product. It may cause serious defects or malfunctions.
- Before connecting the product to the inverter terminal, make sure that the product is turned off, the inverter is turned off and the mains and PV channels are disconnected.

Abbreviation Used in this document

Abbreviation	Full Name	Explanation
ESS	Energy Storage System	System that stores energy to battery and use the energy when needed.
PV	Photovoltaic	Photovoltaic system that converts solar energy into electricity.
SOC	State of charge	Current battery level in %
BMS	Battery Management System	The components inside the battery that defines the operational function of the battery.
DC	Direct Current	-
AC	Alternating Current	-

1. Care And Maintenance

Environmental Requirements

EnergyPak 5 can charge and discharge within the operating temperature range specified below. In extreme temperature ranges, EnergyPak 5 may limit the power of the battery when charging or discharging to improve battery life.

Battery Operating Temperature	Charging: 0℃ to 50℃ Discharging: -20℃ to 50℃
Battery Storage Temperature	-10℃ to 45℃

MARKS The EnergyPak 5 needs to keep the ambient temperature within the range of 0℃~45℃ during startup.

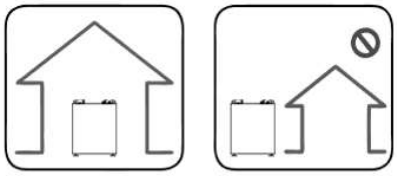
CAUTION Do not lean, stack, or hang objects around the battery.

CAUTION When cleaning the battery, use a soft, lint-free cloth.
It is recommended to use dry and soft cloth, if necessary, only moisten with mild water.

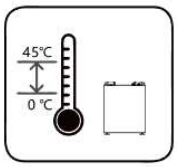
CAUTION Do not use cleaning solvents to clean the battery, or expose it to flammable or harsh chemicals or vapors.

Installation Location

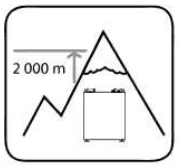
The product installation must meet the requirements described below.

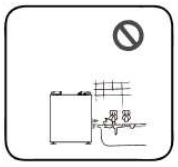


- This product is recommended for indoor use. If the product is installed outdoors, it must not be exposed to direct sunlight or water under any circumstances.
- The mounting surface must be able to bear the weight (~65kg).
- The suitable operating temperature of the product is 0℃~45℃ .

- Do not be installed or used at an altitude higher than 2000 meters.

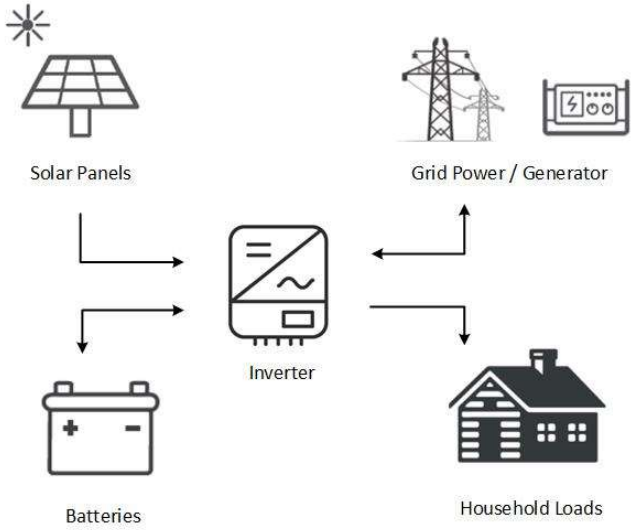


- Do not install this product in the place where flooding may occur.
- Do not install this product in a room with high humidity.
- Do not install the product where there is vibration.
- Do not install this product in the place with ammonia, corrosive steam, acid or salt.
- Installed out of the reach of children and pets.


2. EnergyPak 5 Overview

EnergyPak 5 is a lithium iron phosphate battery with nominal voltage of 25.6V and capacity of 200AH or 5.12KWH. The max continuous current is 200A. The depth of discharge is 80%.

This product is mainly used for energy storage in a solar energy system which is shown below. The system contains solar panels for energy generation, inverter for energy conversion, battery for energy storage, and the load as energy consumer.

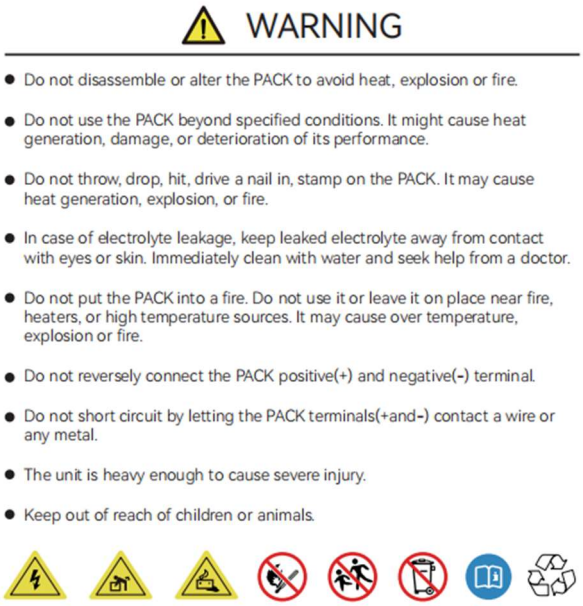


During the daytime, excessive energy generated by PV are stored in the battery which will be used to power the load at night time.

The battery can communicate its data with the inverter. It can also operate without such communication as well.

Product Label And Warning Label

The main attributes of the battery can be found in the product label.

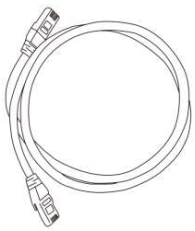


Packing List

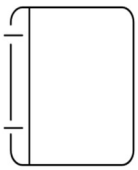
The following items are contained in the package.

EnergyPak 5

Power Cables×2



COM Cable×1

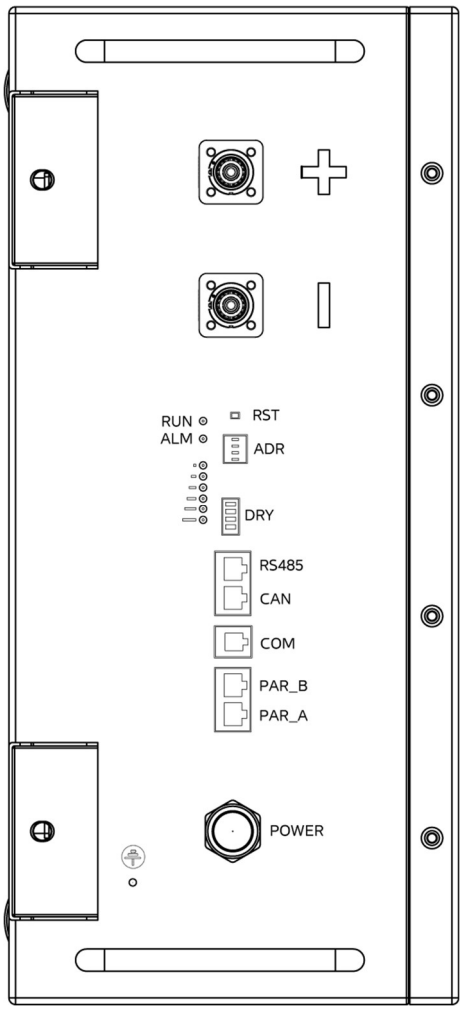


User Manual×1

No.	Item	Description
1	EnergyPak 5	Lithium battery.
2	Power Cables × 2	AWG 2/0 (70mm2). For connecting battery to the inverter for energy transmission.
3	COM Cable × 1	RJ45 cable for communications between batteries.
4	User Manua × 1	-

3. Battery Interface

EneryPak 5 Front Panel



The picture is only for reference.

No	Project	Explanation
1	PAR_A	Parallel Port A
2	PAR_B	Parallel Port B
3	COM	RS232 for trouble shooting
4	CAN	Communication with Inverter
5	RS485	Communication with Inverter
6	DRY	Dry contact
7	ADR	DIP switches for address setting
8	RST	Product reset
9	RUN	Run LED
10	ALM	Alarm LED
11	SOC LED	SOC LED
12	+	Positive terminal
13	-	Negative terminal
14	GND	Ground terminal
15	POWER	Battery on/off button

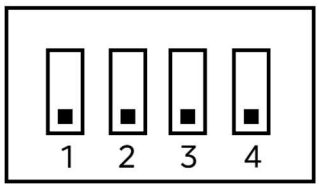
LED Status Indicators

Battery Status	SOC	POWER	RUN	ALM	SOC LED					
		●	●	●	●	●	●	●	●	●
Power off	/	●	●	●	●	●	●	●	●	●
	83%≤SOC≤100%	●	Blinking	●	●	●	●	●	●	●

Standby	66%≤SOC < 83%	●	Blinking	●	●	●	●	●	●	●
	50%≤SOC < 66%	●	Blinking	●	●	●	●	●	●	●
	33%≤SOC < 50%	●	Blinking	●	●	●	●	●	●	●
	16%≤SOC < 33%	●	Blinking	●	●	●	●	●	●	●
	0% < SOC < 16%	●	Blinking	Blinking	●	●	●	●	●	●
	SOC = 0 %	●	Blinking	Blinking	●	●	●	●	●	●
Charge	SOC = 100%	●	●	●	●	●	●	●	●	●
	83%≤SOC < 100%	●	●	●	●	●	●	●	●	Blinking
	66%≤SOC < 83%	●	●	●	●	●	●	●	Blinking	●
	50%≤SOC < 66%	●	●	●	●	●	●	Blinking	●	●
	33%≤SOC < 50%	●	●	●	●	●	Blinking	●	●	●
	16%≤SOC < 33%	●	●	●	●	Blinking	●	●	●	●
	0% < SOC < 16%	●	●	Blinking	Blinking	●	●	●	●	●
Discharge	83%≤SOC < 100%	●	Blinking	●	●	●	●	●	●	●
	66%≤SOC < 83%	●	Blinking	●	●	●	●	●	●	●
	50%≤SOC < 66%	●	Blinking	●	●	●	●	●	●	●
	33%≤SOC < 50%	●	Blinking	●	●	●	●	●	●	●
	16%≤SOC < 33%	●	Blinking	●	●	●	●	●	●	●
	0% < SOC < 16%	●	Blinking	Blinking	●	●	●	●	●	●
	SOC = 0 %	●	●	●	●	●	●	●	●	●
Protection	/	●	●	●	●	●	●	●	●	●
Failure	/	●	●	●	●	●	●	●	●	●

Battery address DIP Switches

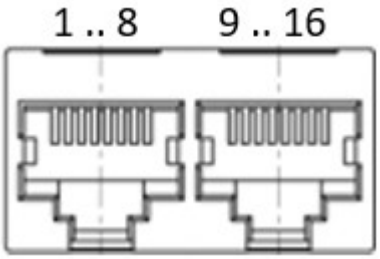
When multiple batteries are connected in parallel, each one should be setting with an unique address. This is done by using the DIP switches.



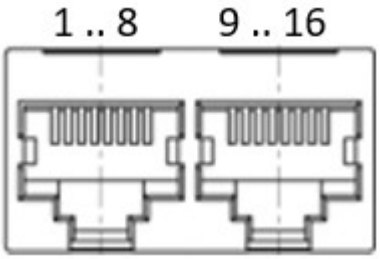
Address	Switch Position			
	#1	#2	#3	#4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

Communication Ports

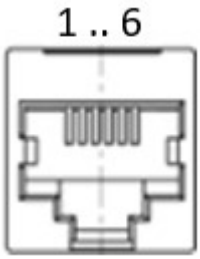
The CAN and RS485 ports are for communicating with inverters.
The parallel communication ports are for communications between batteries.
The RS232 communication port is for trouble shooting and configurations.



CAN and RS485 ports



Parallel communication port



RS232 communication interface

RS232-- with 6P6C vertical RJ11 socket	
RJ11 pin	defined declaration
2	NC
3	TX (single board)
4	RX (single board)
5	GND

RS232 communication interface

RS485- using 8P8C vertical RJ45 socket		CAN-- Using 8P8C vertical RJ45 socket	
RJ45 pin	Pin Definition	RJ45 pin	Pin Definition
1, 2, 3, 6, 8	NC	9, 16	RS485-B1
5	CANL	10, 15	RS485-A1
4	CANH	11, 14	GND
7	GND	12, 13	NC

CAN and RS485 ports

RS485- using 8P8C vertical RJ45 socket		RS485- using 8P8C vertical RJ45 socket	
RJ45 pin	Pin Definition	RJ45 pin	Pin Definition
1 、 8	RS485-B	9 、 16	RS485-B
2 、 7	RS485-A	10 、 15	RS485-A
3 、 6	GND	11 、 14	GND

4 、5	NC	12 、13	NC

Parallel communication port

Power Button

Use this Power button to turn ON or OFF the battery.

POWER

Startup steps：

① Make sure the power cable is properly connected
② Press the POWER button.
③ Battery is ON and operational.

Shutdown steps：

① Press the POWER button.
② Battery is OFF.

REMARKS

The internal relay of the battery will produce a sound when it is switched on / off. This is normal.

WARNING

The Power button is not for emergency operations. A battery disconnect switch should be installed for disconnecting the system from the battery

EnergyPak 5 Communication Interface

Both CAN and RS485 interfaces are responsible for the communication with the inverter, which is determined according to the respective inverter. See CAN/RS485 interface definition table.

4. Battery Connection

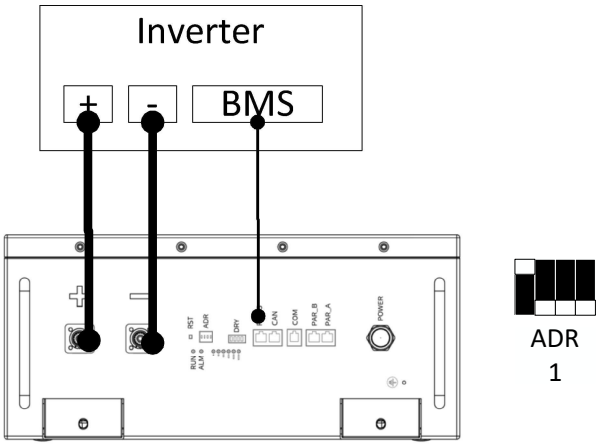
The positive and negative terminals of the battery are distinguished by colors (orange for the positive, black for the negative). When connecting the terminals to another battery or inverter, be sure the polarity is correct. Tighten the terminal bolts with a torque of 2~3Nm

WARNING

Before connecting or disconnecting the power cables, the battery and the inverter must be turned off.

One Battery and One Inverter Connection

The following diagram show the connection of the battery to an inverter. The communication connection is optional. If connected, depends on the inverter communication protocol, it connects to either RS485 or CAN port in the battery.

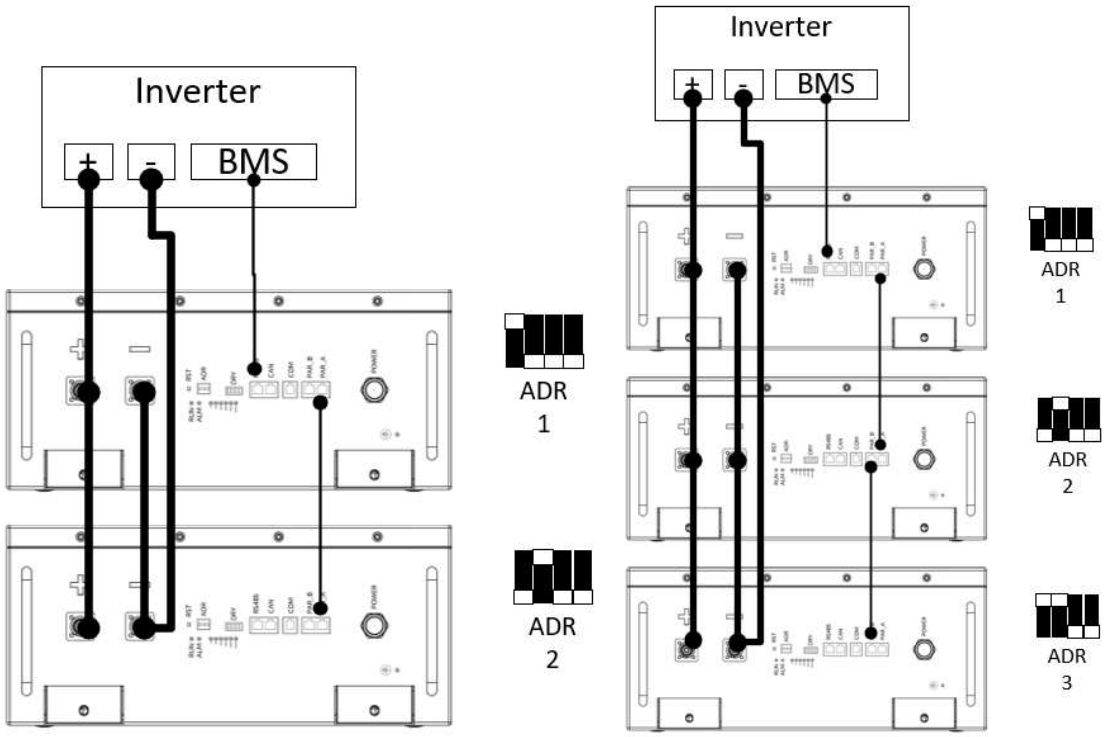


Parallel Connection

The battery can be connected in parallel to increase the capacity. A maximum of 15 units can be connected in parallel.

Two/Three Batteries and One Inverter Connection

The following diagrams show the connection of two or three batteries to an inverter. The communication connection is optional. If connected, depends on the inverter communication protocol, it connects to RS485 or CAN port in the battery. The addresses of the batteries are set to 1, 2 and 3, respectively.



Compatible Inverters

The battery can communicate with the following inverters. Other inverters that do not use communications are also compatible with this battery.

Compatibility Inverter Communications		
Inverter Brand	Inverter Type	Communication
NRUIT	NR-HS5L-A	CAN
NRUIT	NR-HS8L	CAN
Growatt	SPF Inverters	CAN
LuxPower	SNA inverters	CAN
LuxPower	LXP Inverters	CAN
TBB	Apollo Max 3.0&5.0	CAN
Deye	SUN-5K-SG03LP1-EU	CAN
GoodWe	GW5048D-ES	CAN

MEGAREVO	R5KLNA	CAN
SRNE	HF4850S80	RS485
Megarevo	R8KL1	CAN

5. Responding in Emergency Situation

The actions suggested below can only be performed under safe conditions.

In case of fire:

- Turn off the inverter
- Press POWER button to turn off the battery
- Switch off all input and output circuit breakers in the distribution box
- Acceptable fire extinguisher types include: water, CO2, and ABC fire extinguishers. Avoid using type D (flammable metal) fire extinguishers.

In case of flood:

- If any part of the battery and inverter or wires are submerged in water, please keep away from the water.
- Turn off the inverter
- Press POWER button to turn off the battery.
- Switch off all input and output circuit breakers in the distribution box.
- If possible, stopping the water source and pumping the water away.
- Disconnect cables from the battery.
- Contact your supplier for help in time.

If there is odor or smoke:

- Turn off the inverter.
- Press POWER button to turn off the battery.
- Switch off all input and output circuit breakers in the distribution box.
- Disconnect cables from the battery.
- Ventilate the room and contact your supplier for help in time.

If the battery abnormal noise:

- Turn off the inverter.
- Press POWER button to turn off Power Lite 5.0.
- Switch off all input and output circuit breakers in the distribution box.
- Contact your supplier for help in time.

6. Specification

Battery Model	EnergyPak 5 – EP24200
Battey Type	LiFePO4
Nominal Voltage	25.6 V
Nominal Capacity	200 AH, 5.12 KWH
Voltage Range	23 – 28 V
Cont. Charge Current	100 A
Max Charge Current	200 A
Cont. Discharge Current	200 A
Cont. Discharge DC Power	5 KW
Operating Temperature	0℃ ~ 45℃ (Charge) -20℃ ~ 55℃ (Discharge)
Depth of Discharge	90%
Cycle Life	>6000 cycles
Communications	CAN2.0 / RS485 / RS232
IP Grade	IP21
Installation	Wall or Floor Mount
Dimension	535 x 465 x 205 mm
Weight	53 KG
Warranty	5 years

7. Contact US

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