48V Rack-mounted Battery

LiFePO4 Lithium Iron Phosphate Battery

USER MANUAL

Product Description

Technical Specifications		
Battery Type	LiFeP04	
Norminal Voltage（V）	51.2V	
Norminal Energy(KWH)	5.12KWH	10KWH
Nominal Capacity (Ah)	100Ah	200Ah
Design Years	15 Years	
Product Size		
Size(mm)	460*460*145mm (500mm ears incl.)	520*500*236mm (560mm ears incl.)
Weight	44.1kg	75 kg
Technical Parameter		
Cycle Life	6000 times	
Operating Voltage Range	40V-58.4V	
Charging Voltage	DC 58.4V	
Charge/Discharge Current(A)	Same Port 100A	
Internal Resistance	≤40 mΩ	
BMS Parameters		
Self-Consumption	≤2.5W	
Rated Voltage	51.2V	
Balance Current	30-65(MA)	
Communication Method	CAN/RS485/RS232(Optional)	
Information Storage	500 Strip	
Limiting	10/20A(Optional)	
Ambient Temperature		
Operating Temperature	-10°C-55°C	
Storage Temperature	0°C-55°C	
Humidity	15%-75%	
Warranty		
Warranty	10 Years	

Smart
Each module is equipped with an independent BMS system.

Easy Installation
Just Plug & Play.

Safe
Safe lithium,iron phosphate battery cell.

Certifications
CE IEC
UN38.3 MSDS.

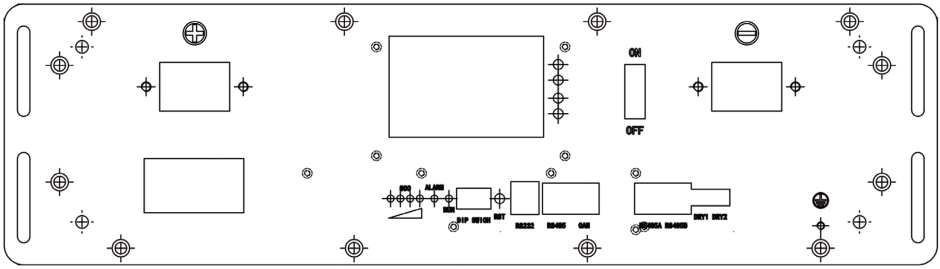
Modular
Modular expansion.

Longer Lifetime
6000 cycles, 15 years design life.

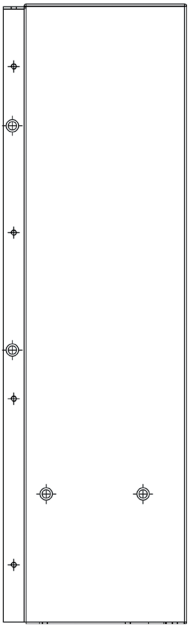
victron energy · 迈格瑞能 MEGAREVO · PYLONTECH · 锦浪科技 · Voltronic Power · phocos · Deye 德业 · LUXPOWER TEK · GOODWE · SMA · Growatt · RENAC · FoxEss · invt 英威腾 · MUST 美世乐 · SRNE 硕日 · KSTAR 科士达

The 48V lithium iron phosphate battery system is a high-tech product developed by Shenzhen Lead New Energy Co., Ltd. for the 5G era. The battery pack adopts scientific internal structure design, advanced BMS system, and industry-leading production technology. With the characteristics of long life, safety and reliability, and wide operating temperature range, it is an ideal green energy storage power supply product, which is widely used in household energy storage and has the world's advanced level of battery products.

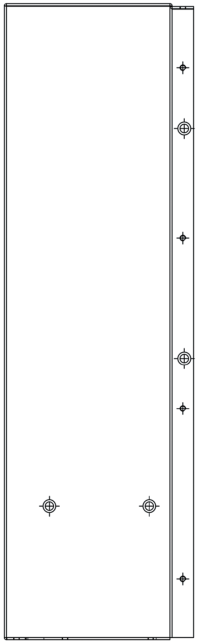
Product Size:



Front View

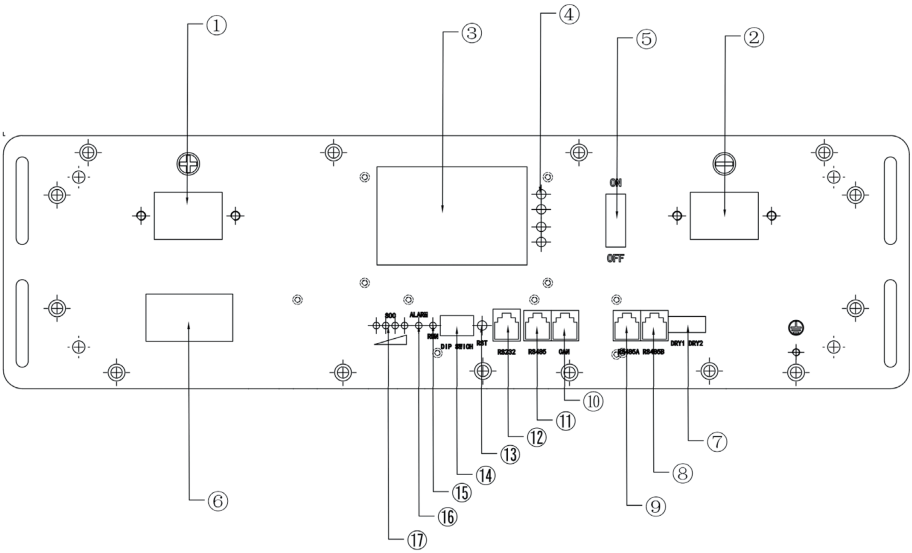


Right Side



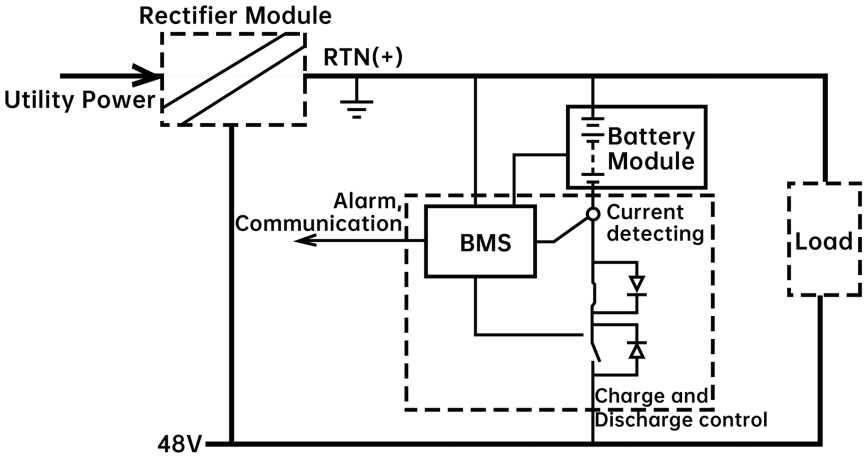
Left Side

Product Interface:



①Battery + ②Battery - ③Display screen ④Display buttons ⑤Switch ⑥Air switch ⑦Dry contact ⑧RS485B ⑨RS485A ⑩CAN ⑪RS485 ⑫RS232 ⑬Reset ⑭Address ⑮Running indicator ⑯Alarm indicator ⑰Capacity indicators

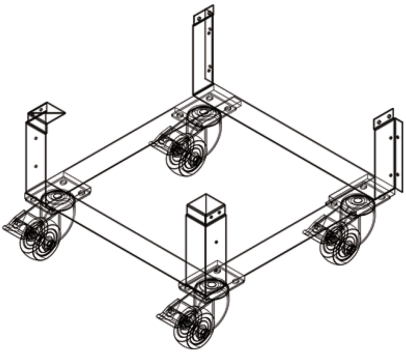
The working principle of the system



The battery system is connected to the AC output of the switching power supply. When there is mains, the output of the switching power supply rectifier module directly supplies power to the 48V load, and the battery is in a floating state; when the mains fails, the battery system supplies power to the load through the inverter to ensure responsible power supply. Each battery system is equipped with an independent battery management system, which is responsible for real-time monitoring and diagnosis of the voltage, current, and temperature of the battery system. It collects a series of data from the battery box through BMS, and provides a safe and reliable protection mechanism for these data to ensure the safe use of the battery box. When the system fails, the user is prompted by sound and light alarms, and the battery system is actively protected by disconnecting the charge and discharge MOS. The system has the function of communication through the RS485/RS232 interface, and realizes intelligent monitoring through telemetry, remote signaling, remote control, and remote adjustment.

Product acessories

System Installation



Frame

The system is installed in a cabinet of about 20 inches, and is locked on the cabinet through 4 M5 (M6 can) bolts through the left and right hanging ears ;

Use more than 6 square yellow rolled green copper wires to ground the panel grounding point, and ensure that the grounding is good;

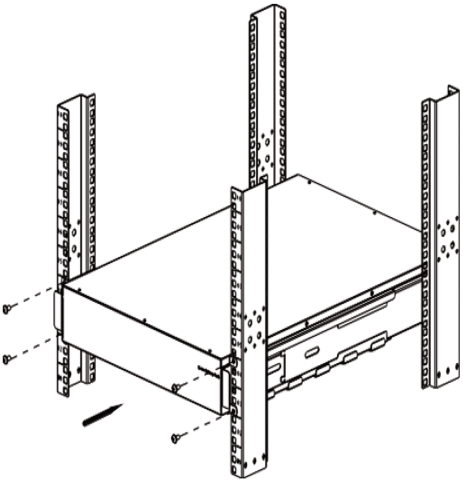
Use red and black flexible wires to connect the positive and negative poles of the battery output terminal on the chassis to the positive and negative poles of the switching power supply or the device respectively. Note that the positive and negative poles cannot be reversed; the wire connected to the

battery output terminal needs to have an OT terminal at one end. , which is locked on the output terminal by the M6 combination screw. 20Ah and below system connection cables are recommended to use 6 square wires, 50Ah systems are recommended to use 16 square wires, 100Ah systems are recommended to use 25 square wires, and 150Ah systems are recommended to use 25 square wires;

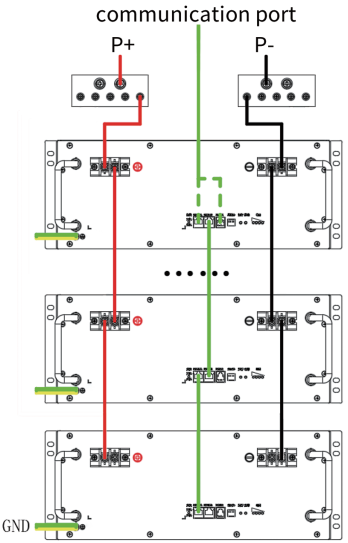
When multiple electrical boxes are used in parallel, the positive and negative poles of each battery

module should be connected to the busbars through cables first, and then the busbars should be connected to the battery terminals of the switching power supply uniformly;

Connect the communication ports in sequence;



Schematic diagram of battery box guide rail rack installation Figure



Schematic diagram of multiple battery boxes and connection lines

Other system maintenance requirement:

After the installation and commissioning of the system project is completed, if the mains is not connected or the system is not turned on, please ensure that the high-voltage output of the lithium iron phosphate battery pack is disconnected and connected to the mains as soon as possible to charge the battery to prevent the battery pack from long-term. In a power-depleted state, causing the battery to fail. A switching power supply that adapts to the wide voltage fluctuation range of the commercial power supply should be used to avoid the safety risk of power failure caused by unstable output DC voltage of the switching power supply under the harsh conditions of the commercial power supply.

LED Instructions

Status	Normal / alarm / protection	RUN	ALM	The power level indicates the LED				Explain
		🟢	🔴	🟢	🟢	🟢	🟢	
Shut down	Dormancy	OFF	OFF	OFF	OFF	OFF	OFF	All off
Standb y	Normal	Flash 1	OFF	According to the electricity instruction				Stand by
	Alarm	Flash 1	Flash 3					Module low voltage
Charge	Normal	ON	OFF	According to the electricity instruction (Power level indicates maximum LED flash 2)				Alarm when overvoltage light off
	Alarm	ON	Flash 3					
	Overcharge protection	ON	OFF	ON	ON	ON	ON	If there is no utility power, the indicator light is on hold state
	Temperature, overcurrent, protection	OFF	ON	OFF	OFF	OFF	OFF	Stop charging
Dischar ge	Normal	Flash 3	OFF	According to the electricity instruction				
	Alarm	Flash 3	Flash 3					
	Undervoltage protection	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharge
	Temperature, over-Current,short-circuit, Reverse connection and failure protection	OFF	ON	OFF	OFF	OFF	OFF	Stop discharge
Failure		OFF	ON	OFF	OFF	OFF	OFF	Stop charging and discharging

Table 1 LED working status indication

State	Charge				Discharge			
Capacity indicator light	L4	L3	L2	L1	L4	L3	L2	L1

Battery Power(%)	0~ 25%	off	off	off	Flash2	off	off	off	on
	25~50%	off	off	Flash2	on	off	off	on	on
	50~75%	off	Flash2	on	on	off	on	on	on
	75~100%	Flash2	on	on	on	on	on	on	on

Table 2 Capacity indication instructions

Flash mode	Bright	off
Flash, 1	0.25s	3.75s
Flash, 2	0.5s	0.5s
Flash 3	0.5s	1.5s

Tabl 3 LED flash instructions

Note: can enable or prohibit LED indicator light alarm through the upper machine, the factory default is enabled.

ON

OFF

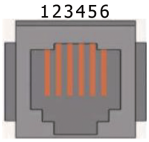
Address	Codes the switch position			
	#1	#2	#3	#4
1	OFF	OFF	OFF	OFF
2	ON	OFF	OFF	OFF
3	OFF	ON	OFF	OFF
4	ON	ON	OFF	OFF
5	OFF	OFF	ON	OFF
6	ON	OFF	ON	OFF
7	OFF	ON	ON	OFF
8	ON	ON	ON	OFF
9	OFF	OFF	OFF	ON
10	ON	OFF	OFF	ON
11	OFF	ON	OFF	ON
12	ON	ON	OFF	ON
13	OFF	OFF	ON	ON
14	ON	OFF	ON	ON
15	OFF	ON	ON	ON
16	ON	ON	ON	ON

Table 5 Dial switch position

Interface Definition

Diagram diagram of the communication interface

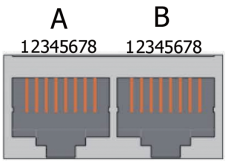
RS232 communication port definition:



Interface	Defined declaration	
X7 Communication port definition	PIN 1	NC(empty)
	PIN 2	NC(empty)
	PIN 3	TX protection board sends data (computer receiving data foot)
	PIN 4	RX protection board receives data (computer sends data)
	PIN 5	Ground signal ground
	PIN 6	NC(empty)

Table 6 The RS232 Port Definition

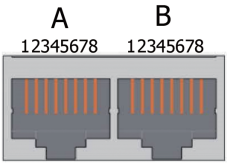
RS485-1 / CAN Communication Interface Definition:



Interface	Defined declaration			Defined declaration		
X1 Communication port definition	A part RS-485-1 Interface	PIN 1	RS485-B 1	B part CAN joggle	PIN 1	CANL
		PIN 2	RS485-A 1		PIN 2	CGND
		PIN 3	RS485-GND		PIN 3	NC(empty)
		PIN 4	RS485-B 1		PIN 4	CANH
		PIN 5	RS485-A 1		PIN 5	CANL
		PIN 6	RS485-GND		PIN 6	NC(empty)
		PIN 7	NC(empty)		PIN 7	CGND
		PIN 8	NC(empty)		PIN 8	CANH

Table 7 The RS 485-1 / CAN port definition

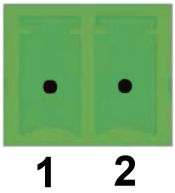
RS485-2 Communication Interface Definition:



Interface	Defined declaration			Defined declaration		
X2 Communication port definition	A part RS-485-2 Interface	PIN 1	RS485-B 2	B part RS-485-2 Interface	PIN 1	RS485-B2
		PIN 2	RS485-A 2		PIN 2	RS485-A2
		PIN 3	RS485-GND		PIN 3	RS485-GND
		PIN 4	NC(empty)		PIN 4	NC(empty)
		PIN 5	NC(empty)		PIN 5	NC(empty)
		PIN 6	RS485-GND		PIN 6	RS485-GND
		PIN 7	RS485-A 2		PIN 7	RS485-A 2
		PIN 8	RS485-B 2		PIN 8	RS485-B 2

Table 8 The RS 485-2 port definition

Dry Contact Description:



KRY1 (2EDG-3.81-2P) Interface

This BMS can provide one channel of dry contact signal, all dry contact signals are passive switches, regardless of polarity.

KRY1(2P terminal)		
BMS State	**Description**	**Remark**
When BMS normal working	1/2 pin is disconnected	

When BMS protected	1/2 pin is connected	Output when SOC alarm, under voltage and over voltage alarm and BMS protection state, such as under voltage protection, over voltage protection or short circuit protection;

Reset button key description

- When the BMS is in the dormant state, press the button for 1 second and then release it, the protection board is activated, and the LED indicator lights start from "L4" for 0.5 seconds.

- When the BMS is in the active state, press the button for 3 seconds and then release it, the protection board is dormant, and the LED indicator lights turn on for 0.5 seconds from "RUN".

Buzzer Action Description

- The buzzer function can be enabled or disabled by the host computer, and the factory default is disabled.

When the buzzer function is disabled, the buzzer does not work when the protection board alarms and protects (except for short circuit and reverse connection protection).

Description Of Sleep Function

When any one of the following conditions is met, the system enters a low power consumption mode:

- The monomer undervoltage protection or the overall undervoltage protection has not been released within 60 minutes.

- Release the button after pressing the button for 3 seconds.

- The lowest cell voltage is lower than the sleep setting voltage (default value 3400mV), and the duration reaches the sleep delay time (default value 1440 minutes) (at the same time, no communication and no charge and discharge current are met).

- Force shutdown through the host computer software.

Before entering sleep, make sure that the P- terminal is not connected to an external voltage, otherwise it will not be able to enter the low power consumption mode.

Wakeup

When the system is in low-power mode and meets any of the following conditions, the system will exit the low-power mode and enter the normal operation mode:

- When the charger is connected, the output voltage of the charger must be greater than or equal to 48V.

- Press the button for 1S, after releasing the button.

Current Limiting Function Description

The BMS has the charging current limiting function, the maximum charging current limiting is 10±1 A, the user can set the current limiting startup condition and the current limiting function on and off

through the upper computer;

The default value of this product is 10A passive current limiting. After entering the current limit, the test will be performed again every 10 minutes. When the current is less than the current limit start value, the current limit function will be turned off. When the current is bigger than the current limit start value, then always in current limiting mode.

Communication Description

1.RS232 data upload and parameter setting function

BMS has RS232 communication function for battery pack data upload and parameter modification setting. The default baud rate is 9600bps, and the RS232 communication interface is RJ 12 network port.

It can communicate with the upper computer software through the RS232 port, can read and monitor the status and information of the battery pack in real time, and can re-modify and set the parameters of the BMS.

2. RS485-1 communication and inverter or EMS communication function

The BMS have the RS485 communication function for the interactive communication between the battery pack data and the inverter, the default baud rate is 9600bps, and the RS485-1 communication interface is the RJ45 network port.

The BMS should have the RS485 communication function for interactive communication with the network management system (EMS). The default baud rate is 9600bps.

3.CAN communication software upgrade and inverter communication function

The BMS have the CAN communication function for the interactive communication between the battery pack data and the inverter, the default baud rate is 500Kbps, and the CAN communication interface is the RJ45 network port.

The BMS has the CAN communication function of software upgrade. The default baud rate is 500Kbps.

4. RS485-2 data upload and communication parallel function

BMS has RS485 communication function for battery pack data upload and RS485 uplink and cascade communication function. The default baud rate is 9600bps, and the RS485-2 communication interface is dual RJ45 network ports.

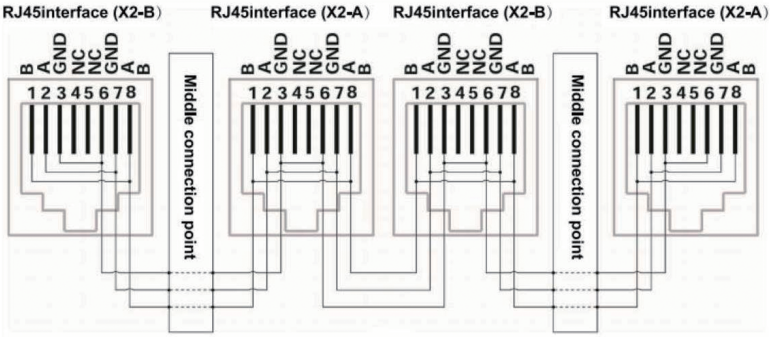
Through the RS485-2 port, the upper computer software can communicate, and the status and information of the battery pack can be read and monitored in real time. (RS485 communication cannot modify parameters)

Parallel (cascade) Function Of Battery Packs

When the battery packs are cascaded, the one with the communication address of 0001 is called the master battery pack, and the other ones with the communication address are called the slave battery

packs. The slave battery pack can communicate with the master battery pack through the RS485 communication interface, and the master battery pack centrally packs and manages the data of each battery pack in this cascaded system.

When the battery packs are cascaded, only the main battery pack can communicate with the host computer, upload the data, status and information of all battery packs in the cascaded system, integrate monitoring and management, and realize remote monitoring.



RS485 Parallel Wiring Diagram

When performing multi-machine parallel communication operation, it is necessary to configure the DIP address of each PACK first. The dialing code adopts BCD code format, the definition of address 1 is  (black dot is OFF state, blank is ON state, the same below), address 2 is defined as  , Address 3 is defined as  , and so on for other addresses.

PC control function

It has the ability to perform various battery management parameters such as cell overvoltage and undervoltage, pack total voltage over and undervoltage, charging overcurrent, discharging overcurrent, cell high and low temperature, environmental high and low temperature, balancing strategy, battery series connection number, battery capacity, etc. It can be set to turn on and off the discharge MOS, charge MOS, current-limiting function switch, buzzer alarm switch, forced sleep switch and online upgrade function of the system software.

Warning

To ensure proper use of the battery please read the manual carefully before using it.

- Handling

Do not expose to, dispose of the battery in fire.

Do not put the battery in a charger or equipment with wrong terminals connected.
Avoid shorting the battery
Avoid excessive physical shock or vibration.
Do not disassemble or deform the battery.
Do not immerse in water.
Do not use the battery mixed with other different make, type, or model batteries.
Keep out of the reach of children.

- Charge and discharge

Battery must be charged in appropriate charger only.
Never use a modified or damaged charger.
Do not leave battery in charger over 24 hours.

- Storage

Store the battery in a cool, dry and well-ventilated area.

- Disposal

Regulations vary for different countries. Dispose of in accordance with local regulations.

Battery Operation Instruction

- Charging

Charging current: Cannot surpass the biggest charging current which in this specification book stipulated.
Charging voltage: Does not have to surpass the highest amount which in this specification book stipulated to decide the voltage.
Charge temperature: The battery must carry on the charge in the ambient temperature scope which this specification book stipulated.
Uses the constant electric current and the constant voltage way charge, the prohibition reverse charges. If the battery positive electrode and the cathode meet instead, can damage the battery.

- Discharging current

The discharging current does not have to surpass this specification book stipulation the biggest discharging current, the oversized electric current electric discharge can cause the battery capacity play to reduce and to cause the battery heat.

- Electric discharge temperature

The battery discharge must carry on in the ambient temperature scope which this specification book stipulated.

- Over-discharges

After the short time excessively discharges charges immediately cannot affect the use, but the long time excessively discharges can cause the battery the performance, battery function losing. The battery long-term has not used, has the possibility to be able to be at because of its automatic flash over characteristic certain excessively discharges the condition, for prevented excessively discharges the occurrence, the battery should maintain the certain quantity of electricity.

- Battery storage

The battery should store in the product specification book stipulation temperature range. If has surpasses above for six months the long time storage, suggested you should carry on additional charge to the battery.

- Warranty

The quality guarantee period is 10 years. If the product is damaged under normal use within one year and not caused by external reasons, the factory will replace it; After one year, if there is a quality problem with the product, the factory will provide paid warranty service, and the specific charge depends on the situation.

- Other chemical reactions

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

Appendix:

Accessories 1:Positive and negative wire*1/Length:0.6m

Accessories 2:Network communication cable/Length:2m

Accessories 3:Date cable RS485-USB/Length:2m

Lead New Energy

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