
All-in-one Energy Storage System

BR-AIO-LV-SR 11.77KWH+10KW

BR-AIO-LV-SR 23.54KWH+10KW



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Thank you for purchasing the lithium battery products of Shenzhen BASENGREEN Technology Co., Ltd.!

1. Safety Instructions

This manual will provide detailed product information and installation instructions for users of the All in one series products. Please read this manual carefully, and put this manual in a place where you can install, operate, and obtain it conveniently.

The safety precautions mentioned in the manual do not represent all the safety matters that should be observed, but are only supplementary to the safety precautions. When installing, operating, and maintaining equipment, local safety regulations and norms should be followed. Only trained professionals can install, operate and maintain equipment. The responsibility for losses will be not covered as the issue caused by violation of general safety operation requirements or violation of safety standards for the design, production, and use of equipment. Installation and maintenance personnel must have high-voltage and AC power operation skills. When installing, operating, and maintaining equipment, they must not wear any conductive objects, such as watches, bracelets, bracelets, and rings, and prevent moisture from entering the equipment.

1.1 Safety precautions



Notice

The input voltage and output voltage of this equipment are dangerously high voltage and large current. Improper operation may endanger life and safety. Please read this manual carefully before installation and operation, and pay attention to various warning signs and warning sentences on the equipment. Do not remove the chassis of the power supply device unless authorized professional maintenance personnel.



High voltage hazard

The high-voltage power supply provides power for the operation of the equipment. Direct contact or indirect contact with the high-voltage power supply through wet objects will bring fatal danger.



Use special tools

When working on high voltage and AC power, be sure to use special tools instead of personal tools.



Electrostatic Prevention

Static electricity generated by the human body will damage the static-sensitive components on the board. Before touching the plug-in, circuit board or chip, ensure correct anti-static measures.

Disconnect power during operation

It is strictly prohibited to install or remove the power cord while the power is on. Before installing or removing the power cord, the power switch must be turned off. Before connecting the cables, please confirm that the connecting cables and cable labels match the actual installation conditions.

- It is strictly prohibited to wear watches, bracelets, bracelets, rings and other conductive objects during operation.
- Before maintenance, the AC power supply and battery power supply must be disconnected to isolate the power input. It is best to check the main unit's input wiring strip with a voltmeter before performing maintenance to ensure that the input power is turned off and in a safe state.

DC short circuit hazard

The power system provides DC regulated power supply. DC short circuit will damage the equipment and cause fatal danger.

Danger

Do not place the device in an environment containing flammable or explosive gases or smoke, and do not perform any operations in such an environment.

Warn

Battery operations must be carried out in accordance with the battery instructions, especially battery wiring operations. Improper operation can damage the battery and even endanger personal safety.

- It is prohibited to short-circuit the positive and negative terminals of the battery. The battery cable must be locked tightly. It is prohibited to touch any two terminals of the battery or the exposed ends of the connecting wires at the same time, otherwise the battery may be damaged or personal injury may occur.
- Be careful to prevent battery electrolyte from overflowing. Spilled electrolyte will corrode metal objects and circuit boards, causing equipment damage and circuit board short circuits.
- The battery should be kept away from fire sources and all electrical equipment that can easily cause sparks to avoid danger or unnecessary losses.

1.2 Equipment operating environment requirements

The operation of any electronic equipment in a flammable atmosphere poses an extreme hazard and the equipment must be used and stored in accordance with the environmental requirements set out in the user manual.

The battery operating environment should meet the following requirements:


- a. Comply with the technical specifications for equipment operation (temperature: 0℃~40℃, relative humidity: 0%~95%).
- b. Provide good ventilation and keep away from water, heat and flammable and explosive materials.
- c. The operating altitude should not exceed 2000m. If used at an altitude exceeding 2000m, it must be derated in accordance with GB/T3859.2.
- d. Avoid long-term use in the following places
 - Places exposed to direct sunlight or near heat sources.
 - Working environment with metal conductive dust.
 - Direct sunlight, dust, volatile gases, corrosive substances and environments with excessive salt content.

2. Product overview

- a. This battery system consists of a 51.2V 230AH battery pack and a SRNE 10KW inverter, which is suitable for home use. For home applications, customized products can be designed according to customer needs to meet different application scenarios, and can provide various solutions for users. The equipment provides stable power support, long service life, high energy density, strong temperature adaptability, and modular design, environmental protection, space-saving, etc.
- b. Configured 200A BMS system, the battery pack has overcharge, over-discharge, over-current, temperature short-circuit and other protection functions. It has a voltage balancing function during the charging process, with high safety performance, long service life, stability and reliability, and has RS485 communication interface, supports battery pack parallel connection, wide operating temperature range (-20~60℃), and good high-temperature discharge performance.

2.1 Label Explanation








The label contains the following information









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ALL IN ONE ENERGY STORAGE SYSTEM		
Inverter Part: Sine 10kW (SPi-10K-SP-EU)		
PV INPUT	Num. of MPP Trackers	2
	Max.PV array power	5,500W + 5,500W
	Max.input current	22A + 22A
	Max.Voltage of Open Circuit	500Vdc + 500Vdc
MAINS / GENERATOR INPUT	MPPV Voltage Range	125~420Vdc + 125~420Vdc
	Input Voltage Range	90~270Vac
	Frequency Range	50/60Hz
	Bypass Overload Current	63A
INVERTER OUTPUT	Rated Output Power	10,000W
	Max.Peak Power	15,000W
	Rated Output Voltage	230Vac (single-phase)
	Load Capacity of Motors	6HP
	Rated AC Frequency	50/60Hz
	Waveform	Pure Sine Wave
	Switch Time	10ms (typical)
	Parallel capacity	1-6 Units (single-phase / three-phase)


SN: WITH IEC/EN 62109-1,IEC/EN 62109-2


CAUTION








- High voltage, warning electric shock!
- The capacitors store hazardous energy.
Do not touch th terminal or remove the shell within 5 minutes after all power is disconnected.
- Keep the equipment well ventilated.
- To avoid electric shock and warranty void, do not remove covers.
- No operator serviceable component inside.




Guangdong Basen Green New Energy Co.,Ltd

ALL IN ONE ENERGY STORAGE SYSTEM	
Battery Part: BASEN GREEN 51.2V230Ah 11.7kWh	
Battery Type	LiFePO4
Battery Voltage Operation Pange	43.2Vdc~58.4Vdc
Max. charging current	200A
Max. Discharging current	200A
Standard capacity	230Ah/11.7kWh
Ingress Protection	IP55

SN: CE UN08.3

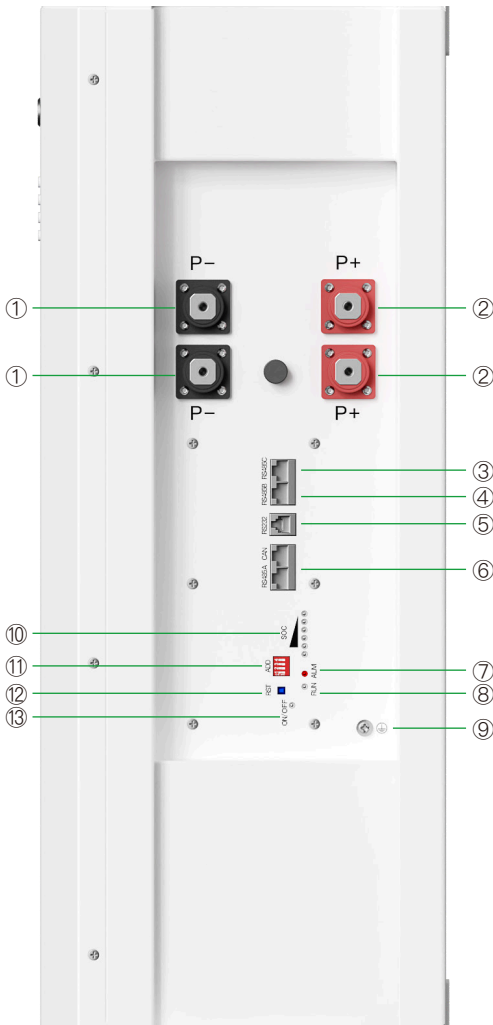

DANGER

DANGER LOW DC VOLTAGE INSIDE
DANGER ARC FLASH & SHOCK HAZARD

- Do not disconnect or disassemble by non-professional personnel.
- Do not drop, deform, hit or pierce with sharp objects.
- Do not place sit a children or pet touchable area.
- Do not place near open flame or flammable material.
- Do not cover or wrap the product case.
- Do not sit or put any object on battery.
- Avoid direct sunlight.
- Avoid moisture or liquid.
- The product ingress Protection (IP) class is IP55.
- Make sure the grounding connection is correct before operation.
- Follow the product manual to make wiring connection.
- If leaking, fire, wet or damaged, switch off the breaker on DC side and stay away from battery. Do not touch the leaking liquid.
- Contact your supplier within 24 hours if any failure happens.

2.2 Battery box interface introduction:

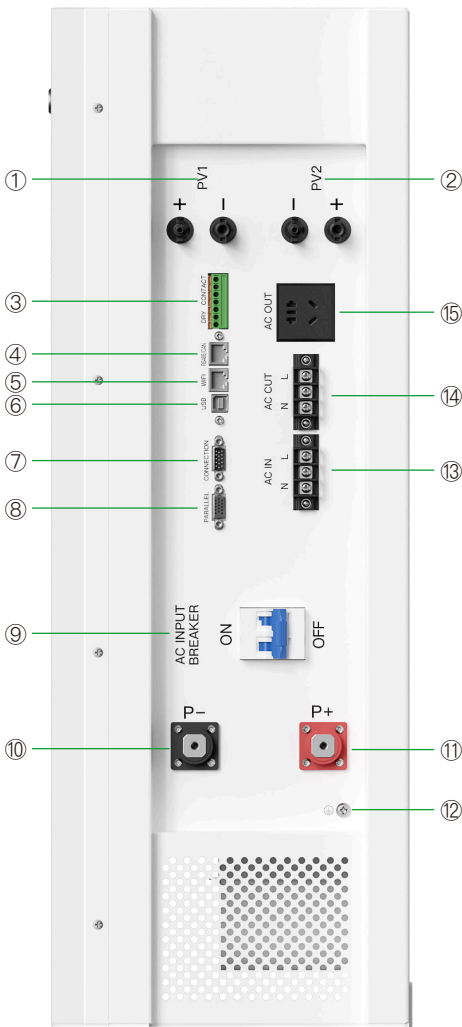
- ①: P- battery negative pole ②: P+ battery positive pole ③: RS485C port
- ④: RS485B port ⑤: RS232 port ⑥: RS485A/CAN port
- ⑦: ALM indicator light ⑧: Running lights ⑨: Ground wire interface
- ⑩: SOC capacity indicator ⑪: ADD Address dialer ⑫: RST reset switch
- ⑬: LCD Display ⑭: Power switch button ⑮: LCD Display



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2.3 Introduction to the inverter box interface:

- ①: PV1 Port
- ②: PV2 Port
- ③: DRY CONTACT PORT
- ④: RS485/CAN Port
- ⑤: WIFI Port
- ⑥: USB Port
- ⑦: Connection Port
- ⑧: Parallel Port
- ⑨: AC Input Breaker
- ⑩: Connect to P-battery negative pole
- ⑪: Connect to P+ battery positive pole
- ⑫: Ground port
- ⑬: AC_IN
- ⑭: AC_CUT
- ⑮: AC_OUT
- ⑯: Power switch button
- ⑰: LCD Display



2.4 Battery module unit



Battery module unit performance parameters

Name	Specification	Remark
Battery pack specifications and models	51.2V230AH	
Battery box series and parallel number	16 serial 1 parallel	
Battery box dimensions	W750*D650*H253mm	
Battery box weight	103KG	
Battery box voltage range	43.2V-58.4V	
Operating temperature	Charging: 0°C < T≤55°C Discharge: -20°C < T≤60°C	
Maximum charging current	200 A	
Maximum discharge current	200 A	

2.5 Inverter module unit



Inverter Module Unit Performance Parameters

Model	SPI-10K-SP-EU	
BATTERY		
Battery Type	Li-ion/ Lead-Acid/ User Defined	
Battery Voltage Range (V)	48Vdc	
Voltage Range	40~60Vdc	
Max.MPPT Charging Current	200A	
Max.Mains/Generator Charging	100A	120A
Max.Hybrid Charging Current	180A	200A

PV INPUT	
Num. of MPPT Trackers	2
Max.PV Array Power	11000W
Max.Input Current	22/22A
Max.Voltage of Open Circuit	500Vdc
MPPT Voltage Range	125~425Vdc
UTILITY/ GENERATOR INPUT	
Input Voltage Range	90~275Vac
Frequency Range	50/60Hz
Bypass Overload Current	63A
EFFICIENCY	
MPPT Tracking Efficiency	99.9%
Max. Battery Inverter Efficiency	92%
General	
Dimensions	620*445*130mm
Weight	27kg
Protection Degree	IP20, indoor Only
Operating Temperature Range	-10~ 55°C, >45°C derated
Humidity	-25°C~ 60°C
Cooling Method	Internal Fan
Warranty	1 Years
COMMUNICATION	
Embedded Interfaces	RS485/CAN/USB/ Dry contact
External Modules (Optional)	Wi-Fi / GPRS
CERTIFICATION	
Safety	IEC62109-1,IEC62109-2UL1741
RoHs	Yes
EMC	EN61000-6-1,EN61000-6-3, FCC 15 class B

2.6 Appearance of the stacked battery system



11.7kWH

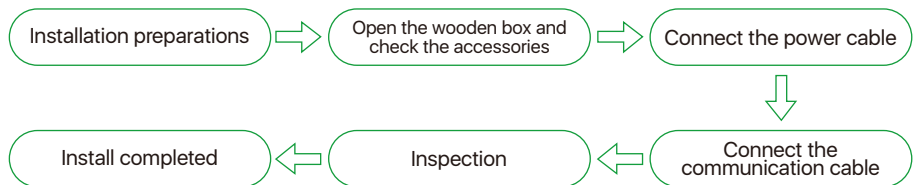
23.4kWH

2.7 Performance parameters of stacked battery system

Name	Specification		Remark
Battery Type	Lithium iron phosphate battery		
Product number	51.2V230AH	51.2V460AH	
Rated voltage	51.2V	51.2V	
Rated Capacity	230Ah	460AH	
Rated power	11.77kWh	23.54kWh	
Push stack size	W750*D650 *H680mm	W750*D650 *H925mm	
Total battery weight	Approx. 158Kg	Approx. 258Kg	
Support communication	CAN and RS485 communication		
Inverter brand	SRNE 10KW Inverter		
Voltage range	43.2V-58.4V		
Operating temperature	Charging: 0°C < T ≤ 55°C Discharge: -20°C < T ≤ 60°C		
Maximum charging current	200A		
Maximum discharge current	200A		

3. Installation Notes

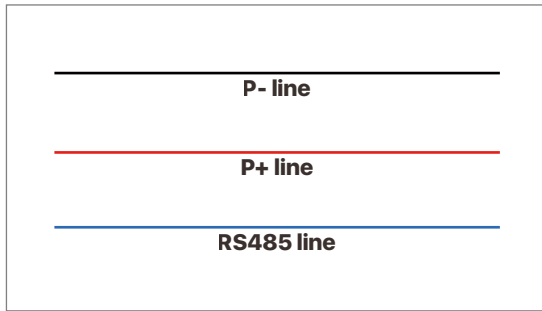
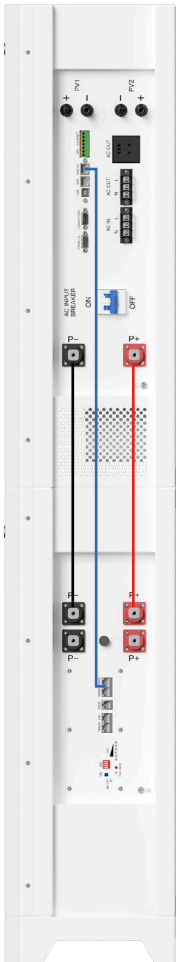
3.1 Installation process



3.2 Installation tools

Tool		
Clamp ammeter	Phillips screwdriver	Electric batch
Multimeter	Socket wrench	Protective gloves

3.3 Connection



















RS485A port is used for communication between the inverter box and the battery box, it can also use for communication with the upper monitor system.

RS485B and RS485C Ports are used for communication for batteries in parallel connection

4. DIP switch definition and setting

Please refer to the table below to set the DIP switch for parallel connection.

4-BIT					
Address	Dip Switch Position				Illustration
	#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	

5. Inverter Setup Instructions

5.1 Description of settings

00: Exit	17: Battery equalization charging voltage
01: AC output source priority	18: Battery equalization charging duration
02: AC output frequency	19: Battery equalization charging delay time
03: AC input voltage range	20: Battery equalization charging interval
04: Voltage point of battery switch to utility	21: Battery equalization charging stop-start
05: Voltage point of utility switch to battery	22: Power saving mode(support stand-alone mode only)
06: Battery charging mode	23: Over-load restart
07: Battery charging current	24: Over-temperature restart
08: Battery Type	25: Buzzer alarm
09: Battery boost charging voltage	26: Power source switching reminder
10: Battery boost charging delay time	27: Inverter overload switch to bypass
11: Battery float charging voltage	28: Max. Utility charging current
12: Battery over-discharge voltage(delay off)	30: RS485 address
13: Battery over-discharge voltage delay time	31: AC output mode(only in standby mode)
14: Battery under-voltage alarm	32: RS485 communication
15: Battery under-voltage limit voltage	33: BMS communication
16: Battery equalization charging	

5.2 Basic Setting Procedure

5.2.1 "01"-AC output source priority

Turn on the inverter module, and press the "⊙" key to enter the setup interface (as shown in Fig. 1), at this time there is a "00" item (as shown in Fig. 2) that keeps flashing, press "△" to enter the "01" item, "01" keeps flashing.

Press "√" to enter the setting of "01" item (as shown in Fig. 3), at this time, "01" is not flashing, but the setting of "01" is flashing.

There are three modes such as "UTI", "SBU", and "SOL". Customers can set the mode according to the use of demand, such as selecting the "SOL" mode, pressing the "√" key can be completed on the "01" item content setting success (as shown in Fig. 4)



Figure 1



Figure 2



Figure 3



Figure 4

5.2.2 "08"-Battery Type

Press the "△" key to the "08" item, at this time, the "08" item keeps flashing,

Press the "√" key to confirm the setting of the "08" item (as shown in Fig. 5), there are lead-acid, lithium-ion, ternary, and other modes. The lithium-ion mode on behalf of the symbols "L14", "L15", "L16" and other series, select 'L16' series, press the "√" key to complete the Setting (as shown in Fig. 6).



Figure 5



Figure 6

5.2.3 "32"-RS485 communication

Press the "△" key to the "32" item, at this time, the "32" item keeps flashing, press the "√" key to confirm the setting of "32" items (as shown in Fig. 7).

"SLR" means enabling the PC remote monitoring protocol(as shown in Fig. 7)

"485" means enabling RS485 and BMS communication, (as shown in Fig. 8)

"CAN" means both enable CAN and BMS communication, (as shown in Fig. 9)

Select "485". Press "√" to confirm.



Figure 7



Figure 8



Figure 9

5.2.4 "33"-BMS communication

Press the "△" key to the "33" item, at this time, the "33" item keeps flashing.

Press the "√" key to confirm the setting of item "33" (as shown in Fig. 10), there are corresponding protocols, select "PYL" (as shown in Fig. 11), and press the "√" key to confirm the setting.



Figure 10



Figure 11

5.2.5 Switch the battery communication protocol

Check the screen of the battery module, press the "menu" button, and press the "▽" key (as shown in Fig. 12) to reach the "CommType Set" part, then press the "ENTER" key to select 485-Pylon (as shown in Fig. 13 and 14), after a few seconds, the battery will emit beeped, and display the current protocol. After that, the inverter shows communication successful(as shown in Fig. 15).



Figure 12



Figure 13



Figure 14



Figure 15

6. Battery storage and transportation instructions

- According to the characteristics of the battery, the lithium battery pack should meet its storage environmental conditions during storage and transportation to maximize performance of protecting the battery.
- During storage and transportation, lithium batteries should be properly protected to maintain an SOC level of about 50% to 70% to ensure that there is no short circuit or liquid entering the lithium battery pack or being immersed in liquid (such as water, oil, etc.)
- If not used temporarily, the battery should be stored in a dry, clean and well-ventilated warehouse at 10°C~35°C
- During the loading and unloading process, batteries should be handled with care, and strict precautions should be taken to prevent throwing, rolling, and heavy pressure.

7. Warning

To prevent the battery from leaking, heating, or exploding, please pay attention to the following precautions:

Warning!

- Do not use or place the battery in high temperatures (in hot sunlight or in a hot car), otherwise it may cause the battery to overheat, fire or function failure, life is shortened; The recommended temperature for long-term battery storage is 10°C~35°C.
- Do not throw the battery in the fire or heater to prevent fire, explosion and environmental pollution; End-of-life batteries should be returned to the supplier or battery recycling point for disposal.
- Do not use it in places with strong static electricity and magnetic field. Otherwise, the battery safety protection device may be damaged, resulting in unsafe risks.
- If the battery leaks, electrolyte into the eyes, do not rub, should immediately wash the eyes with water, and immediately sent to the hospital for treatment, otherwise it will hurt the eyes.
- If the battery gives off an odor, heats up, changes color, becomes deformed, or shows any abnormality during use, storage, or charging, the battery should be removed from the device or charger immediately and deactivated.
- It is forbidden to insert the positive and negative terminals of the battery directly into the power socket. A special charger for lithium-ion batteries must be used.

- It is necessary to check the battery voltage and connections before installation. It can be used only after everything is normal.
- The battery is stored half-charged. If the battery has not been used for three months, it needs to be recharged once.
- If the electrode is dirty, wipe it with a dry cloth before use, otherwise it may cause poor contact and functional failure.

8. Maintenance

- The parameters that should be paid attention to when using lithium batteries, such as input voltage range, output waveform, output power, long power supply time, conversion time, and lithium battery brand, machine noise, volume, weight and other parameters. The battery should not be fully loaded, should retain more than 20% of the power margin, good load control between 40% and 60% of the rated output power.
- Master the basic knowledge of lithium batteries, carefully read the equipment manual, understand the meaning of various warning information, warning code, indicator light, as well as the causes and countermeasures. Familiar with the function of various switches and buttons on the equipment. Familiar with various operations, clear connections.
- Strengthen daily inspection and maintenance, check whether the equipment has alarms, no odor, no abnormal sound, check whether the joint is loose and hot, whether the cooling fan is operating normally, whether the equipment is normal, and solve the problem in time.
- Maintain a suitable ambient temperature. An important factor affecting the life of lithium batteries is the ambient temperature, and the best ambient temperature required is between 20–25 °C. Once the ambient temperature exceeds 25 °C, the battery life will be cut in half for every 10 °C increase.
- Replace wasted/broken batteries in time. In the continuous operation and use of lithium batteries, due to the difference in performance and quality, it is inevitable that the performance of individual batteries will decline and the storage capacity will not meet their requirements. When one or more batteries in the battery pack are damaged, the maintenance personnel should conduct an inspection test on each battery to remove the damaged battery.
- The use of lithium battery environment should pay attention to good ventilation, conducive to heat dissipation, and keep the environment clean. Otherwise, the battery pack will be in poor contact, resulting in energy loss or failure to charge.

9. Revision of product specifications

Our company reserves the right to interpret and revise this product specification without prior notice if the version is upgraded.

10. Configuration list

Serial No.	Item Name	Quantity	Dimensions (width/depth/height)mm	Weight (KG)
1	Battery pack	adaptation	W750*D650*H253	103KG
2	Inverter box	adaptation	W750*D650*H365	58KG
3	Battery tray	adaptation	W750*D650*H135	13KG
4	Parallel communicatio cable	adaptation		
5	Inverter communication cable	adaptation		
6	M8*12mm screw	adaptation		
7	P+ parallel cable	adaptation		
8	P+ parallel cable	adaptation		

Need additional information?

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