HV Lithium-ion Battery Series

User Manual

SW48B-HV-2500

☑	Model	Typical Capacity (Ah)	Typical Voltage (V)	Nominal Capacity (kWh)	Recommend charge	Battery Designation
	SW48B7.5K-H3	52	144	7.48	35A charge to 159.7V CC	IFpP/29/149/120/[(15S)3S]E/-20+30/95
	SW48B10K-H4	52	192	9.98	35A charge to 213V CC	IFpP/29/149/120/[(15S)4S]E/-20+30/95
	SW48B12.5K-H5	52	240	12.48	35A charge to 266.2V CC	IFpP/29/149/120/[(15S)5S]E/-20+30/95
	SW48B15K-H6	52	288	14.97	35A charge to 319V CC	IFpP/29/149/120/[(15S)6S]E/-20+30/95
	SW48B17.5K-H7	52	336	17.47	35A charge to 372.7V CC	IFpP/29/149/120/[(15S)7S]E/-20+30/95
	SW48B20K-H8	52	384	19.96	35A charge to 426V CC	IFpP/29/149/120/[(15S)8S]E/-20+30/95

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Made in China

BEWARE OF FIRE HAZARD! DISPOSAL ACC.TO LOCAL REGULATIONS!

Content

SUNWAYTECH

Product Name : Lithium-ion battery
Battery Type : LiFePO4 (LFP)
Battery Designation : IFpP/29/149/120/[15S]E/-20+30/95
Model No : SW48B-HV-2500
Rated Capacity : 52Ah
Nominal Voltage : 48V
Nominal Energy: 2.5kWh
Recommended Charge : 35A charge to 53.25V CC
Ingress Protection : IP65
Operation Temperature : Charge 0~55℃ / Discharge -20~55℃
Storage Temperature : -20~35℃

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Remark.
SN Date code rule:
CPXXXXX-YYMMDDXXX
CPXXXXX represent product material item number for different models.
YY represent year. For example, 23 is equal to 2023.
M represent month, From 1 to 12. For example, 12 is equal to DEC.
DD represent day. For example, 01 is 1st.XXX represent serial number: 001 to 999

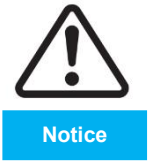
1 Safety Information

1.1 General Safety

Please carefully read the manual safety precautions, and observe all the safety instructions on the equipment and in this document.

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

For user safety and utilization efficiency of this manual, a list of symbols are designed to alert people from danger. You must understand and comply with the emphasized information to avoid personal injury and property damage. Relative safety symbols have been listed below.

	DANGER indicates a hazardous situation which, if not avoided will result in serious injury and fire.
	WARNING indicates a hazardous situation which, if not avoided will result in property loss or void warranty.
	NOTICE indicates normal situation which, if not avoided will result in that battery doesn't work.

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

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

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

Personal Safety

Danger

- Do not place battery at a children or pet touchable area.
- Do not touch the energized battery, as the enclosure is hot.
- Do not touch the energized battery terminals.
- Do not stand on, lean on, or sit on the battery.

1.3 Electrical Safety

Symbols on battery

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

	Electrical danger	Voltage exits when the battery is powered on. Only qualified engineers are allowed 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.
	WEEEtag	Can't leave battery as garbage disposal.
	Recycle	Battery can be recycled.

Electrical Safety

Danger

- Before installation, ensure that the equipment is intact. Otherwise, electric shocks or fire may occur.
- Do not connect or disconnect power cables when battery is power-on. Which may cause electric arcs and sparks more overfire or personal injury.Before connecting a power cable, check the positive or negative connectors are correct.
- Do not connect in series with different batteries.
- Do not connect battery with AC directly.
- Do not connect battery with PV wiring directly.
- Batteries are not allowed to be used in parallel.
- Do not connect battery to faulty or unqualified inverter or charger.
- Do not create short circuits with the external connection.
- Make sure the grid is cut off and the battery is powered off before maintenance.
- Make sure the earth cable is connected correctly before operation.

Warning

- Recharge battery in every six months.
- Recharge battery within 10 days after battery is fully discharged.
- Make sure battery cable placement is 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 power-off when multiple connection in series.
- Please check lights on sequence when battery power-on.
- Please make sure communication connection connect correctly with battery and inverter.
- Please check inverter alarm or SOC reading when there is BMS communicated with inverter.

1.4 Environment Safety

Warning

- Ensure that the equipment is installed in a dry and well-ventilated environment.
- The installation position must be away from direct sunlight and rain.
- The installation position must be far away from fire sources.
- The installation position must be far away from water sources such as taps, sewer pipes, and sprinklers to prevent water seepage.
- The bracket must be installed solidly and horizontally.
- Do not expose the equipment to flammable or explosive gas or smoke.
- Do not perform any operation on the equipment in such environments.
- 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.

1.5 Transportation Safety

Warning

- The products belong to class 9 dangerous goods.
- Please protect the packing case from the below situations.Being dampened by rains, snows, or falling into water.
- Falling or mechanical impact.
- Being upside-down or tilted.

PS:system lock function

It designed to stop the operation of the battery system if one or more cells deviate from the specified operating region. Additionally, this feature should be non-resettable by the user and should not allow for automatic reset.

The procedure for returning the function of the battery system involves checking that the status of the battery system complies with the manufacturer's manual, particularly the battery system maintenance manual. Depending on the application, the battery system may allow for a final discharge for emergency functions, but certain cell limits need to be considered to prevent dangerous reactions.

It's important to follow the manufacturer's guidelines outlined in the manual to ensure the proper handling and maintenance of the battery system. If you have specific questions or if there's anything else you'd like to know or discuss about this topic, feel free to provide more details or ask your question.

If the product deviates from the working range (such as high temperature or over-discharge), the product will permanently fail and the user cannot reset it by himself. You need to contact the manufacturer and have relevant professionals perform repairs.

2 Product Information

2.1 Battery Overview

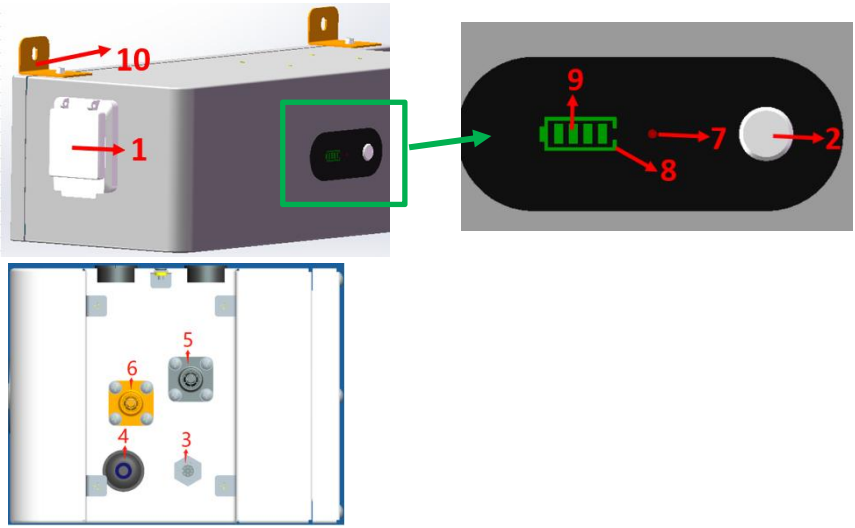
The battery is a high voltage smart series lithium battery pack which consists of long span LiFePO4 battery cells and functional BMS. It can store and release electric energy based on the requirements of the inverter controller. It is mainly for home energy storage system.

Features

- LiFePO4 prismatic cell
- 6000 cycles @0.5C & 25℃conditions
- Maximum 0.7C charge and discharge capability
- High voltage smart series
- Be extended to 8 packs maximum
- Protective and active BMS allows greater reliability and control
- IP 65 grade
- Fully recyclable at the end of life
- Compact

2.2 Appearance

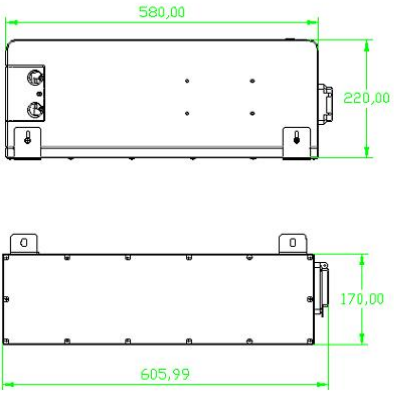
2.2.1 High Voltage Box Appearance



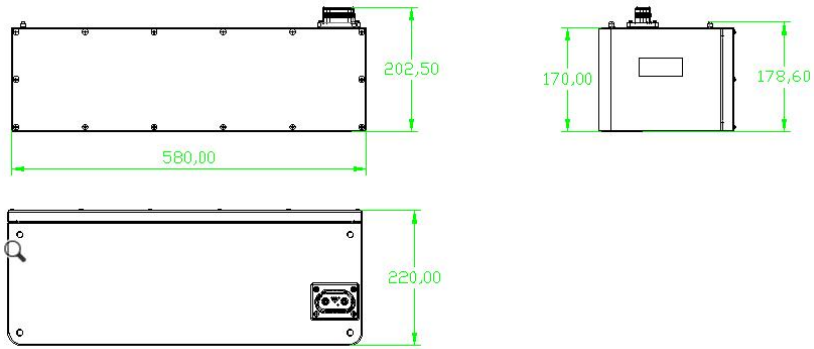
1) The DC power switch
2) The start-up switch
3) WiFi
4) Inverter communication port
5) Inverter Negative terminal
6) Inverter Positive terminal
7) ALM
8) RUN
9) SOC

2.3 Dimensions

2.3.1 PDU Dimensions



2.3.2 Battery Pack Dimensions



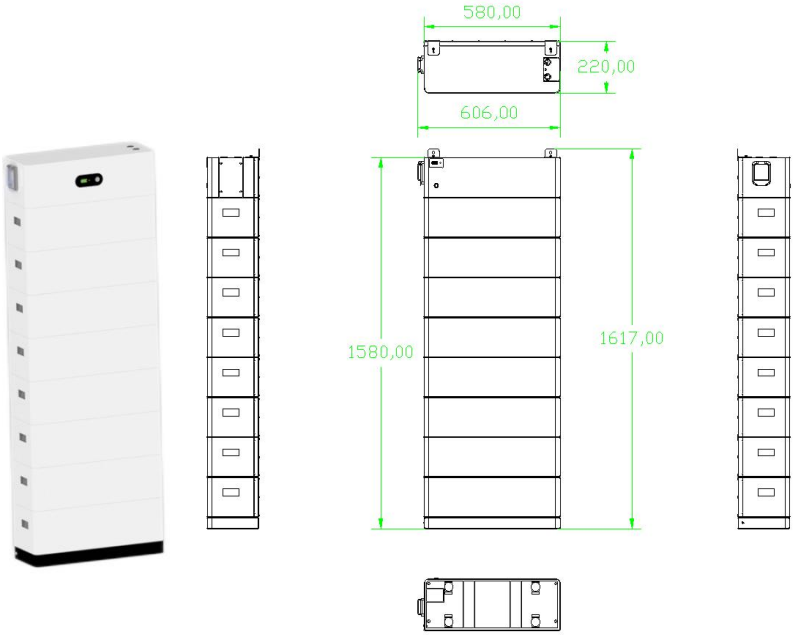
2.4 Capacity Options

The battery can be series connected for extending energy(kWh).

Warning

- The maximum power(kW) is limited by main cables from PDU to inverter.
- The minimum 3 battery packs can be series communicated.

- The maximum 8 battery packs can be series communicated.



Alarm

When the red light is on, some parameters of the battery have reached the warning value, or the battery has begun to be protected, BMS will send a warning when the battery is being charged or discharged. But after the battery protection, some functions of the battery can not be used.

For the alarm item, charging and discharging of the battery is prohibited. After the alarm is cleared, the system will automatically resume work:

1 Low temperature warning (forbid charging)

2 High temperature alarm (prohibit charging and discharging)

3 Communication is abnormal (charging and discharging prohibited)

4 Low battery voltage warning (discharge prohibited)

5 High battery voltage warning (prohibit charging)

6 SOC low alarm (discharge prohibited)

Protection item, battery high voltage protection, the system cannot be restored, and manual intervention is required. After checking that the state of the battery system complies with the battery system manufacturer's manual, it can be powered on again:

1 Charging overcurrent protection

2 discharge overcurrent protection

3 Thermal runaway protection

4 The battery is seriously overvoltage

5 The battery is seriously undervoltage

6 System hardware failure

For other general alarms, it is only an alarm prompt and does not affect the system work

2.5 Operation

Power ON

STEP1 → Turn on DC switch.

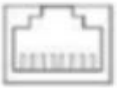
STEP2 → Press the start button 3s, BMS power supply.

Power OFF

Turn off the power switch, the system power is shut down.

2.6 Communication Port

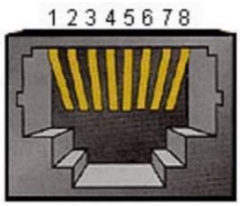
A PDU has one RJ45 ports for communicating with PCS ;



PCS COM

PCS COM pin interface definition

Pins	Definitions
1	NC
2	NC
3	NC
4	CAN2H
5	CAN2L
6	NC
7	485A
8	485B



3 Specifications

3.1 3- Series Battery Specifications

Item	Specifications	remark
	7.5kWh	
Battery Type	LiFePO4	
Typical Capacity (Ah)	**52Ah**	
Typical Voltage (V)	144V	
Connection	**1P45S**	
Voltage Working Range (V)	114.7V-159.7V	Single cell: 2.55V-3.55V
Working Temperature(°C)	Charge: 0°C~+55°C, Discharge: -20°C~+55°C	
Storage Temperature(°C)	-20°C~+35°C	
Nominal Capacity (kWh)	**7.488kWh**	
Max. Charge Current(A)	35A	
Max. Discharge Current(A)	35A	
Cycle Life	>6000	25°C ,0.5C , 90%DOD
Capacity retention	⩾95%	25°C ,0.5C, 500 cycle
SOC Accuracy	<8%	
Weight(kg)	**~80kg**	
Dimensions(mm)	606x220x730mm	L x W x H
IP Grade	IP65	
Transportation SOC	30%	
Cooling	Nature	

3.2 4– Series Battery Specifications

Item	Specifications	remark
	10kWh	
Battery Type	LiFePO4	
Typical Capacity (Ah)	**52Ah**	
Typical Voltage (V)	192V	
Connection	**1P60S**	
Voltage Working Range (V)	153V-213V	Single cell: 2.55V-3.55V
Working Temperature(°C)	Charge: 0°C~+55°C, Discharge: -20°C~+55°C	
Storage Temperature(°C)	-20°C~+35°C	
Nominal Capacity (kWh)	**9.984kWh**	
Max. Charge Current(A)	35A	
Max. Discharge Current(A)	35A	
Cycle Life	>6000	25°C ,0.5C , 90%DOD
Capacity retention	≥95%	25°C ,0.5C, 500 cycle
SOC Accuracy	<8%	
Weight(kg)	**~105kg**	
Dimensions(mm)	606x220x900mm	L x W x H
IP Grade	IP65	
Transportation SOC	30%	
Cooling	Nature	

3.3 5– Series Battery Specifications

Item	Specifications	remark
	12.5kWh	
Battery Type	LiFePO4	
Typical Capacity (Ah)	**52Ah**	
Typical Voltage (V)	240V	
Connection	**1P75S**	
Voltage Working Range (V)	191.2V-266.2V	Single cell: 2.55V-3.55V
Working Temperature(°C)	Charge: 0°C~+55°C, Discharge: -20°C~+55°C	
Storage Temperature(°C)	-20°C~+35°C	
Nominal Capacity (kWh)	**12.48kWh**	
Max. Charge Current(A)	35A	
Max. Discharge Current(A)	35A	
Cycle Life	>6000	25°C ,0.5C , 90%DOD
Capacity retention	⩾95%	25°C ,0.5C, 500 cycle
SOC Accuracy	<8%	
Weight(kg)	**~129kg**	
Dimensions(mm)	606x220x1070mm	L x W x H
IP Grade	IP65	
Transportation SOC	30%	
Cooling	Nature	

3.4 6– Series Battery Specifications

Item	Specifications	remark
	15kWh	
Battery Type	LiFePO4	
Typical Capacity (Ah)	**52Ah**	
Typical Voltage (V)	288V	
Connection	**1P90S**	
Voltage Working Range (V)	230V-319V	Single cell: 2.55V-3.55V
Working Temperature(°C)	Charge: 0°C~+55°C, Discharge: -20°C~+55°C	
Storage Temperature(°C)	-20°C~+35°C	
Nominal Capacity (kWh)	**14.976kWh**	
Max. Charge Current(A)	35A	
Max. Discharge Current(A)	35A	
Cycle Life	>6000	25°C ,0.5C , 90%DOD
Capacity retention	≥95%	25°C ,0.5C, 500 cycle
SOC Accuracy	<8%	
Weight(kg)	**~152.3kg**	
Dimensions(mm)	606x220x1240mm	L x W x H
IP Grade	IP65	
Transportation SOC	30%	
Cooling	Nature	

3.5 7- Series Battery Specifications

Item	Specifications	remark
	17.5kWh	
Battery Type	LiFePO4	
Typical Capacity (Ah)	**52Ah**	
Typical Voltage (V)	336V	
Connection	**1P105S**	
Voltage Working Range (V)	267.7V-372.7V	Single cell: 2.55V-3.55V
Working Temperature(°C)	Charge: 0°C~+55°C, Discharge: -20°C~+55°C	
Storage Temperature(°C)	-20°C~+35°C	
Nominal Capacity (kWh)	**17.472kWh**	
Max. Charge Current(A)	35A	
Max. Discharge Current(A)	35A	
Cycle Life	>6000	25°C ,0.5C , 90%DOD
Capacity retention	⩾95%	25°C ,0.5C, 500 cycle
SOC Accuracy	<8%	
Weight(kg)	**~176.2kg**	
Dimensions(mm)	606x220x1410mm	L x W x H
IP Grade	IP65	
Transportation SOC	30%	
Cooling	Nature	

3.6 8– Series Battery Specifications

Item	Specifications	remark
	20kWh	
Battery Type	LiFePO4	
Typical Capacity (Ah)	**52Ah**	
Typical Voltage (V)	384V	
Connection	**1P120S**	
Voltage Working Range (V)	306V-426V	Single cell: 2.55V-3.55V
Working Temperature(°C)	Charge: 0°C~+55°C, Discharge: -20°C~+55°C	
Storage Temperature(°C)	-20°C~+35°C	
Nominal Capacity (kWh)	**19.968kWh**	
Max. Charge Current(A)	35A	
Max. Discharge Current(A)	35A	
Cycle Life	>6000	25°C ,0.5C , 90%DOD
Capacity retention	≥95%	25°C ,0.5C, 500 cycle
SOC Accuracy	<8%	
Weight(kg)	**~199.5kg**	
Dimensions(mm)	606x220x1580mm	L x W x H
IP Grade	IP65	
Transportation SOC	30%	
Cooling	Nature	

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