



INSTALLATION, OPERATION &
MAINTENANCE MANUAL

***All-in-one with off-grid
inverter***

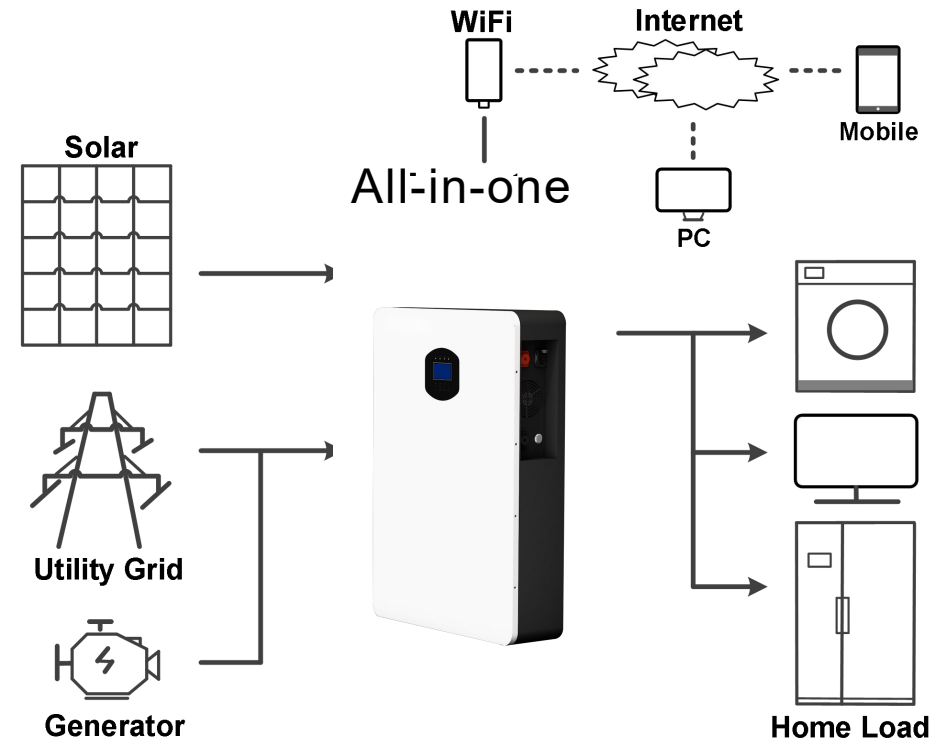
ENERGY STORAGE SYSTEM

01 Introduction

1.1 System Introduction

sms-10kwh-5kw-h1 (including sms-Pack5.12 and 5KW-H1)/ sms-20KWH-5KW-A1 (including sms-Pack10.24 and 5KW-H1) can be used in DC coupled systems (mainly newly installed), Ac coupling system (mainly transformation) and off-grid system (mainly transformation, photovoltaic capacity increase), the scheme is as follows:

Solution	Configuration	
	Inverter	Battery
SMS-2.56KWH-1KF1-A1	1KF1-A1	SMS-2.56KWH
SMS-5KWH-5KF1-A1	3KF1-A1	SMS-5KWH
SMS-5KWH-5KF1-A1	5KF1-A1	SMS-5KWH
SMS-10KWH-5KF1-A1	5KF1-A1	SMS-10KWH





This sign indicates a hazardous situation which, if not avoided, could result in death or serious injury!



The Storion smsenergy-H5/H3 must not be touched or put into service until 5 minutes after it has been switched off or disconnected to prevent an electric shock or injury.



This sign shows danger of hot surface!



Refer to the operating instructions.

1.3.4. Setting of Warning Sign for Safety

During instruction, maintenance and repair, follow the instructions below to prevent non-specialist personnel from causing misuse or accident:

- Obvious signs should be placed at front switch and rear-level switch to prevent accidents caused by false switching.
- Warning signs or tapes should be set near operating areas.
- The system must be reinstalled after maintenance or operation.

1.3.5 Measuring Equipment

To ensure the electrical parameters to match requirements, related measuring equipment are required when the system is being connected or tested. Ensure that the connection and use matched specification to prevent electric arcs or shocks.

1.3.6 Moisture Protection

It is very likely that moisture may cause damages to the system. Repair or maintaining activities in wet weather should be avoided or limited.

1.3.7 Operation After Power Failure

The battery system is part of the energy storage system which stores life-threatening high voltage even when the DC side is switched off. Touching the battery outlets is strictly prohibited. The inverter can keep a life-threatening voltage even after disconnecting it from the DC and /or AC side. Therefore, for safety reasons, it must be tested with a properly calibrated voltage tester before an installer works on the equipment.

4. Battery Safety Datasheet

1. Hazard Information

Classification of the hazardous chemical

Exempt from classification according to Australian WHS regulations.

Other hazards

This product is a Lithium Iron Phosphate Battery with certified compliance under the UN Recommendations on Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, subsection 38.3. For the battery cell, chemical materials are stored in a hermetically sealed metal case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage. However, if the product is exposed to a fire, added mechanical shocks, decomposed, added electric stress by misuse, the gas release vent will be operated. The battery cell case will be breached at the extreme. Hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acrid or harmful fume may be emitted.

1.4.2 Safety Datasheet

For detailed information please refer to the provided battery safety datasheet.

1.5 General Precautions

DANGER

Danger to life due to high voltages of the PV array, battery and electric shock. When exposed to sunlight, the PV array generates dangerous DC voltage which will be present in the DC conductors and the live components of the inverter. Touching the DC conductors or the live components can lead to lethal electric shocks. If you disconnect the DC connectors from the system under load, an electric arc may occur leading to electric shock and burns.

- ◆ Do not touch uninsulated cable ends.
- ◆ Do not touch the DC conductors.
- ◆ Do not open the inverter and battery.
- ◆ Do not wipe the system with damp cloth.
- ◆ Have the system installed and commissioned by qualified people with the appropriate skills only.
- ◆ Prior to performing any work on the inverter or the battery pack, disconnect the inverter from all voltage sources as described in this document.

WARNING

Risk of chemical burns from electrolyte or toxic gases. During standard operation, no electrolyte shall leak from the battery pack and no toxic gases shall form. Despite careful construction, if the Battery Pack is damaged or a fault occurs, it is possible that electrolyte may be leaked or toxic gases formed.

- ◆ Do not install the system in any environment of temperature below -10°C or over 50°C and in which humidity is over 90%.
- ◆ Do not touch the system with wet hands.
- ◆ Do not put any heavy objects on top of the system.
- ◆ Do not damage the system with sharp objects.
- ◆ Do not install or operate the system in potentially explosive atmospheres or areas of high humidity.
- ◆ Do not mount the inverter and the battery pack in areas containing highly flammable materials or gases.
- ◆ If moisture has penetrated the system (e.g. due to a damaged enclosure), do not install or operate the system.
- ◆ Do not move the system when it is already connected with battery modules. Secure the system to prevent tipping with restraining straps in your vehicle.
- ◆ The transportation of SMS-H1/H3 must be made by the manufacturer or an instructed personal. These instructions shall be recorded and repeated.

- ◆ A certified ABC fire extinguisher with minimum capacity of 2kg must be carried along when transporting.
- ◆ It is totally prohibited to smoke in the vehicle as well as close to the vehicle when loading and unloading.
- ◆ For the exchange of a battery module, please request for new hazardous goods packaging if needed, pack it and let it be picked up by the suppliers.
- ◆ In case of contact with electrolyte, rinse the affected areas immediately with water and consult a doctor without delay.

CAUTION:

Risk of injury through lifting or dropping the system. The inverter and battery are heavy. There is risk of injury if the inverter or battery is lifted incorrectly or dropped during transport or when attaching to or removing from the wall.

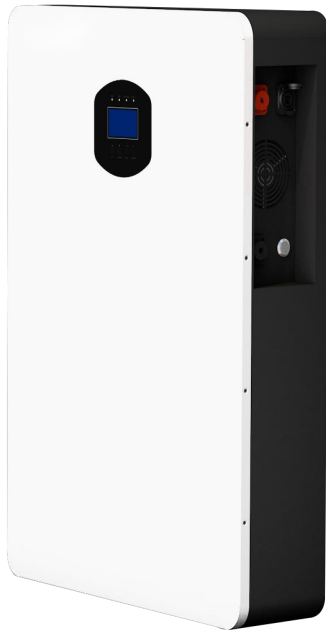
- ◆ Lifting and transporting the inverter and battery must be carried out by more than 2 people.

1.6 Parts List

Check the following parts list to ensure it is complete. smsenergy delivers a total system separately on site to client, this consists of:



1.7 System Appearance



All-In-OneESS

Item	Model	2. 56KWh+3KW	5KWh+5KW
Battery Module	Voltage	25. 6V	51. 2V
	Battery capacity	100Ah	
	Charge voltage	29V	58V
	Discharge cut-off voltage	20V	42V
	Charge current	50A	
	Max charge current	120A	100A
	Discharge current	120A	100A
	Max discharge current	150A	100A
	Max peak current	100A	200A
	Communication method	RS485/CAN	
Hybrid Inverter	Power	3KW	5KW
	Output Voltage	230VAC	
	Frequency	50Hz/60Hz	
	input power (PV)	3KW	5KW
	Input voltage range (PV)	30~400VDC	120~430VDC
	Communication connect port	/	WiFi (optional)
Parameter	Protection Degree	IP21	
	Material/Colour	Metal/White	
	Size	450*150*600mm	500*170*720mm
	Weight	29Kg	56Kg
	Temperature	Charge:0℃~50℃ Discharge;-15℃~60℃	

1.8 Liability Limitation

Any product damage or property loss caused by the following conditions, smsenergy does not assume any direct or indirect liability.

Product modified, design changed or parts replaced without smsenergy authorization; Changes, repair attempts and erasing of series number or seals by non smsenergy technician;

System design and installation are not in compliance with standards and regulations;

Fail to comply with the local safety regulations (VDE for DE, SAA for AU);

Transport damage (including painting scratch caused by rubbing inside packaging during shipping). A claim should be made directly to shipping or insurance company in this case as soon as the container/packaging is unloaded and such damage is identified;

Fail to follow any/all of the user manual, the installation guide and the maintenance regulations;

Improper use or misuse of the device;

Insufficient ventilation of the device;

The maintenance procedures relating to the product have not been followed to an acceptable standard;

Force majeure (violent or stormy weather, lightning, overvoltage, fire etc.);

Damages caused by any external factors.

02

Installation

This Manual introduces the basic steps to install and set up SMS-H1/H3



NOTE:

Please be cautious unpacking the battery, otherwise components could be damaged.

1. Installation Site and Environment

General

This SMS-H1/H3 energy storage system is outdoor version and can be installed in an outdoor or an indoor location.

When SMS-H1/H3 systems are installed in a room, SMS-H1/H3 must not be hampered by the structure of the building, the furnishings and equipment of the room.

The SMS-H1/H3 is naturally ventilated. The location should therefore be clean, dry and adequately ventilated. The mounting location must allow free access to the unit for installation and maintenance purposes, and the system panels must not be blocked.

The following locations are not allowed for installation:

habitable rooms;

ceiling cavities or wall cavities;

on roofs that are not specifically considered suitable; access / exit areas or under stairs / access walkways;

where the freezing point can be reached, such as garages, carports or other places as well as wet rooms (environmental category 2);

locations with humidity and condensation over 90%; places where salty and humid air can penetrate;

seismic areas - additional security measures are required; Sites with altitude below 2000m;

places with an explosive atmosphere;

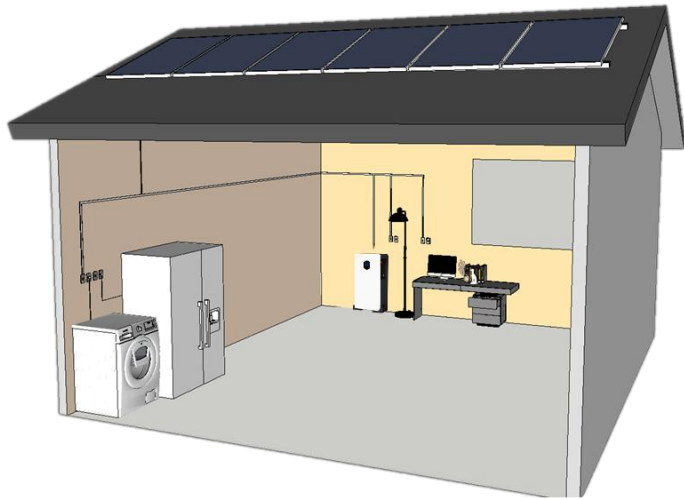
locations with direct sunlight or a large change in the ambient temperature; places with flammable materials or gases or an explosive atmosphere.

2.1Product Introduction



NO	NAME	Silk-SCREEN	REMARK
1	Breaker	Breaker	/
2	485-1	AC OUT	AC OUTPUT
3	485-2	WiFi	/
4	BMS	USB	/
5	Dry Contact	NO/C/NC	/
6	USB	USB	/
7	WiFi	WiFi	/
8	AC IN	AC IN	AC input
9	AC OUT	AC OUT	AC OUTPUT
10	PV IN	PV IN	PV+
11	PV IN	PV IN	PV-
12	SW	SW	battery switch
13	SW	SW	Inverter switch

Step 5 Open the front cover of the last battery and remove the DIP cover. Now set the DIP switch 2 to "on" mode and close the cover again.



Household off-grid application



NOTE:

The DIP setting is only changed on the last battery.

If you connect more than 2 battery modules to the system, please only install the additional batteries 3-4 on the side of the system. You can connect up to 4 batteries, 2 each mounted on top of each other, to the SMS-H1/H3. To do this, carry out the individual installation steps as for the first two batteries, including the DIP setting on the last module.



Figure 24 Increase the battery Modules



NOTE:

Recommended AC circuit breaker rating is 32A.



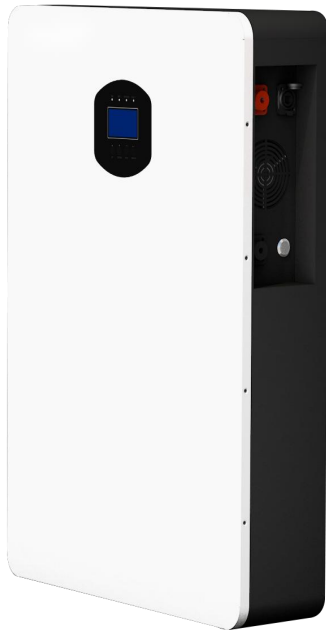
NOTE:

It is necessary to disconnect the power line, communication line and communication line between battery pack and inverter to manually sleep all battery packs.



STATEMENT:

The method of anti-islanding protection is Method(c)



03 System Operation

3.1 Switch On

When turning on the system, it is very important to follow the steps below to prevent damage to the system.

WARNING: Please check the installation again before turning on the system.



Step 1: Turn on the external PV switch.

Step 2: Turn on the external grid switch.

Step 3: If backup load is applied, turn on the external Backup switch.



NOTE:

the Backup switch is only used when a backup load is applied.

Step 4: Open the outer shell of the cable box. Open the battery switch cover and turn on the battery switch on the cable box.

Step 5: Press power button on all the batteries until the indicator lights turn on.

Step 6: Close the battery switch cover and the outer shell of the cable box.

3.2 Switch Off

- Step 1:** Press the power button on all the batteries, till the lights turn off.
- Step 2:** Open cable box outer shell, open the battery switch cover and turn off the battery switch.
- Step 3:** Turn off the external grid switch.
- Step 4:** If backup load is applied, turn off the external backup switch.
- Step 5:** Turn off the external PV switch on the cable box.
- Step 6:** Close the battery switch cover and the outer shell of cable box.

3.3 Emergency Procedure

When the SMS-H1/H3 energy storage system appears to be running abnormally, you can turn off the grid-connected main switch that directly feeding the BESS, and turn off all load switches within the BESS, turn off the battery switch at the same time. To prevent a potentially fatal personal injury, if you want to repair or open the machine after the power is switched off, please measure the voltage at the input terminals with a suitably calibrated voltage tester. Before working on this equipment, please confirm that there is no grid electric supply to the BESS! The upper cover plate cannot be opened until the DC-link capacitance inside the battery modules discharges completely about 15 minutes later.

3.3.1 Emergency Handling Plan

1. Disconnect the AC breaker.
2. Check the control power supply. If it is OK, return the power supply to find out the reason.
3. Please record every detail related to the fault, so smsenergy can analyse and solve the fault. Any operation of equipment during a fault is strictly forbidden, please contact smsenergy as soon as possible.
4. As battery cells contain a little Oxygen inside and all cells have got explosion-proof valves, explosion hardly happens.
5. When the indicator light on the battery shows a red fault, check the fault type through the communication protocol, and contact our after-sales service personnel for advice.

3.3.2 Hazards

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed to the leaked substance, immediately perform the actions described below:

Inhalation: Evacuate the contaminated area, and seek medical attention.

Eye contact: Rinse eyes with running water for 5 minutes, and seek medical attention.

Contact with skin: Wash the affected area thoroughly with soap and water, and seek medical attention.

Ingestion: Induce vomiting and seek medical attention.

3.3.3 Fire

If a fire breaks out in the place where the battery pack is installed, perform the following countermeasures:

Fire extinguishing media

During normal operation, no respirator is required. Burning batteries can not be extinguished with a regular fire extinguisher, this requires special fire extinguishers such as the Novec 1230, the FM-200 or a dioxin extinguisher. If the fire is not from a battery, normal ABC fire extinguishers can be used for extinguishing.

Fire -fighting instructions

1. If fire occurs when charging batteries, if it is safe to do so, disconnect the battery pack circuit breaker to shut off the power to charge.
2. If the battery pack is not on fire yet, extinguish the fire before the battery pack catches fire.
3. If the battery pack is on fire, do not try to extinguish but evacuate people immediately.



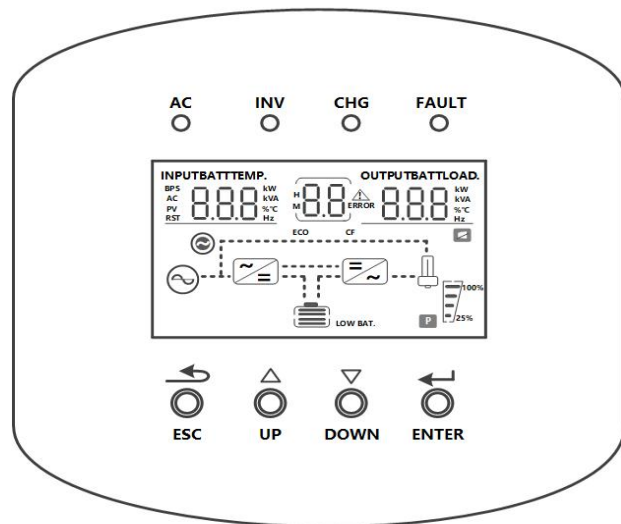
There may be a possible explosion when batteries are heated above 150°C. When the battery pack is burning, it leaks poisonous gases. Do not approach.

Effective ways to deal with accidents

Battery in dry environment: Place damaged battery into a segregated place and call local fire department or service engineer.

Battery in wet environment: Stay out of the water and don't touch anything if any part of the battery, inverter, or wiring is submerged.

Do not use a submerged battery again and contact the service engineer.



LED	Color (default)	Remark
AC	Green	ON: Grid is normal and AC is work Flash: Grid is normal and AC is not work OFF: Grid is abnormal
INV	Yellow	ON: Inverter work in battery mode OFF: Inverter work in the other mode
CHG	Yellow	ON: Float charge state Flash: CV charge state OFF: Other states
FAULT	Red	ON: Fault Flash: Warning OFF: Normal

4.2-1 Key Description

The ENTER button is used as a confirmation and setting button. If you need to navigate to settings, press and hold the ENTER button for 2 seconds on the display page to access the settings page. In the settings menu, use the UP or DOWN arrow buttons to browse and select the settings you want to adjust.

The UP and DOWN arrow buttons are used to scroll up or down on any page. Press and hold either button for 0.1 seconds or longer to perform page scrolling.

The ESC button serves as the "exit" button

4.3 Operation Instructions for Query

In normal display mode, if there are 10 pages of information displayed, you can use the UP or DOWN button to flip through the pages by pressing and holding for around 0.2-1 second. The corresponding query contents for each page are shown below:

Index	Function Code	Functionality	Function Display
1	P1	Inverter Input/Output Voltage	
2	P2	Inverter Input/Output Frequency	
3	P3	Battery Voltage and Charging Current	
4	P4	PV Voltage and PV Charging Current	
5	P5	PV Voltage and PV Power	
6	P6	AC Output Voltage and Active Power	
7	P7	AC output voltage and complex power.	
8	P8	AC output voltage and load power percentage.	

9	P9	Software version.	
10	10	PV generation.	
		"SIG" displayed on the right indicates that the inverter is not parallel-connected. "PAR" displayed on the right indicates that multiple inverters are parallel-connected.	
12	12	"SIG" displayed on the right indicates that the lithium battery is running in a single group. "PAR" displayed on the right indicates that multiple lithium battery groups are parallel-connected.	
13	13	The voltage and current of a lithium-ion battery depend on its usage status and the type of connection.	
14	14	The temperature and State of Charge (SOC) of a lithium-ion battery have important effects on its performance and lifespan.	
15	15	The left side represents the rated capacity, while the right side displays the current remaining capacity of the lithium-ion battery.	
16	16	Constant voltage charging voltage of lithium battery	
17	17	Alarm and fault information of lithium battery: On the left side are the alarm messages, and on the right side are the fault messages.	

05 Routine Maintenance

5.1 Maintenance Plan

- ◆ Check if wire connections are loose.
- ◆ Check if cables are aged/damaged.
- ◆ Check if cable insulating ribbon drops.
- ◆ Check if cable terminal is loose, any overheat sign.
- ◆ Check if ground connection is good.

8.1.1 Operating Environment

(Every six months)

Carefully observe whether the battery system equipment is ineffective or damaged; When the system is running, listen to any part of the system for abnormal noise; Check whether the voltage, temperature and other parameters of the battery and other equipment parameters are normal during system operation;

5.1.2 Equipment Cleaning

(Every six months to one year, depending on the site environment and dust content, etc.) Ensure that the ground is clean and tidy, keep the maintenance access route unblocked, and ensure that the warning and guiding signs are clear and intact. Monitor the temperature of the battery module and clean the battery module if necessary.

5.1.3 Cable, Terminal and Equipment Inspection

(Every six months to one year)

- ◆ Check if the cable connections are loose.
- ◆ Check whether the cables are aged / damaged.
- ◆ Check whether the cable tie of the cable has fallen off.
- ◆ Check if the cable terminal screws are loose and the terminal position has any signs of overheating.
- ◆ Check whether the management system of the system equipment, monitoring system and other related equipment are invalid or damaged.
- ◆ Check that the grounding of the equipment is good and the grounding resistance is less than 10 ohms.

5.2 Notes

After the equipment is out of operation, please pay attention to following notes while maintaining :

- ◆ Related safety standards and specifications should be followed in operation and maintenance.
- ◆ Disconnect all the electrical connections so that the equipment would not be powered on.
- ◆ Wait at least 5 minutes after disconnection, so that the residual voltage of the capacitors drops to a safe voltage. Use a multimeter to make sure that the equipment is completely discharged.
- ◆ The equipment should be repaired by professional staff only and it is strictly forbidden for maintenance staff to open equipment modules on their own.
- ◆ Appropriate protective measures should be taken while maintaining, such as insulated gloves, shoes, and anti-noise ear plugs.
- ◆ Life is priceless. Make sure no one would get hurt first.
- ◆ In case of a deep discharge, the battery must be charged to a SOC rate of 30% to 50% if the entire system is static (ie the battery has not been charged for two weeks or more).

Please contact us in time if there are any conditions that could not be explained in the manual.

06 Quality Assurance

When product faults occur during the warranty period, smsenergy or his partner will provide free service or replace the product with a new one.

Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, smsenergy has the right to refuse to honor the quality guarantee.

Conditions

- After replacement, unqualified products shall be processed by smsenergy.
- The customer shall give smsenergy or his partner a reasonable period to repair the faulty device.

Exclusion of Liability

In the following circumstances, smsenergy has the right to refuse to honor the quality guarantee:

Fault Code	Fault Event	Fault description
1	Bus soft start fail	During soft start of the bus, the set voltage cannot be reached and cannot be recovered. This issue applies to the 3KW/5KW model.
2	Bus voltage high	The bus voltage is higher than the set value and cannot be recovered. This issue applies to the 3KW/5KW model.
3	Bus voltage low	"The bus voltage is below the set value unrecoverable Applicable model: 3KW/5KW"
4	Battery Over Current	"Battery current transient value exceeds 580A, immediately protect unrecoverable Applicable model: 3KW/5KW" "The PFC or INV temperature sensor exceeds the temperature set value After the restart function is enabled, the fault cannot be recovered after six failed restarts Applicable model: 3KW/5KW"
5	Over Temperature	The PFC or INV temperature sensor is higher than the temperature set value After the restart function is enabled, the fault cannot be recovered after six failed restarts Applicable model: 3KW/5KW

6	Battery voltage high	The battery voltage is above the set value recoverable Applicable model: 3KW/5KW"
7	Bus softstart Fault	"The bus DC soft starting voltage does not reach the set value unrecoverable Applicable model: 3KW/5KW"
8	Bus Short Fault	When working normally, the bus bar is below the set value instantly unrecoverable Applicable model: 3KW/5KW
9	INV Soft Fault	"After a period of soft startup of the inverter, either cannot reach the rated output voltage unrecoverable Applicable model: 3KW/5KW"
10	INV Over Voltage	"In battery mode, the inverter voltage is above the set value unrecoverable Applicable model: 3KW/5KW"

11	INV Under Voltage	"In battery mode, the inverter voltage is below the set value unrecoverable Applicable model: 3KW/5KW"
12	INV Short	The inverter voltage is momentarily less than the set value, and the current is momentarily greater than the set value The fault cannot be recovered after six failed restarts Applicable model: 3KW/5KW"
13	Negative Power	"The inverter power is below the set value for a period of time unrecoverable Applicable model: 3KW/5KW"
14	Overload Fault	"Load is out of specification The fault cannot be recovered after six failed restarts Applicable model: 3KW/5KW"
15	Model Fault	Software identification machine type does not match hardware detection unrecoverable Applicable model: 3KW/5KW"

16	No Bootloader	No bootstrap unrecoverable Applicable model: 3KW/5KW
17	MPPT Programmer Burning	The machine is burning the PV control program Resume after burning Applicable model: 3KW/5KW
19	Same Serial	In parallel mode, multiple machines with the same serial number are detected unrecoverable Applicable model: 3KW/5KW
20	CAN Fault	"In parallel mode, CAN bus communication is abnormal unrecoverable Applicable model: 3KW/5KW"

Fault Reference Code

Alarm code	Alarm name	Alarm description
50	Battery Open	"The battery voltage is below 8V/ knot The battery voltage can be recovered up to 10V/ knot Applicable model: 3KW/5KW"
51	Battery Under Voltage	"Battery voltage less than 10.5V/ knot (default) Battery voltage 10V/ knot +0.2*N recoverable Applicable model: 3KW/5KW"
52	Battery voltage low	"Based on the bAL set point unrecoverable Applicable model: 3KW/5KW"
53	Battery Charge Short	"The battery voltage is less than 5V and the charging current is greater than 4A unrecoverable Applicable model: 3KW/5KW"
54	Low Watt Discharge	"The battery discharge exceeds the set low-power discharge time The battery voltage higher than 13.2V/ node can be recovered Applicable model: 3KW/5KW"
55	Battery Over Charge	"The battery voltage is above the set value recoverable Applicable model: 3KW/5KW"

56	BMS Loss	"Communication failed after BMS communication was enabled recoverable Applicable model: 3KW/5KW"
57	Over Temperature	"The PFC or INV temperature sensor is higher than the set value The value below the set value can be restored Applicable model: 3KW/5KW"
58	Fan Lock	"No fan speed signal detected recoverable Applicable model: 3KW/5KW"
59	EEPROM Fail	"EEPROM read and write failed unrecoverable Applicable model: 3KW/5KW"
60	Over Load Warning	"The load is greater than 102% Recoverable (load less than 97%) Applicable model: 3KW/5KW"
61	Generator Waveform Abnormal	"Abnormal generator waveform detection recoverable Applicable model: 3KW/5KW"
62	PV Energy Weak	When the battery is not connected, the bus voltage is below the set value 10mins Recoverable Applicable model: 3KW/5KW"
63	Synchronizat ion Signal Fail	"Parallel plate disconnected fault Switching to single machine mode can be recovered or line disconnection troubleshooting can be recovered Applicable model: 3KW/5KW"

64	Parallel configuration incompatible	"There is a lack of phase setting when the three phase is combined Restore when the three-phase Settings are correct Applicable model:1KW 3KW/5KW"
65	Parallel version incompatible	"The parallel system has incompatible version numbers Restore when all machine versions in parallel system are compatible with each other Applicable model:1WK 3KW/5KW"
66	Parallel Communication Fault	"Slave cannot be detected in parallel system In the parallel system, the recovery is detected after the slave is connected, and the recovery is set to the single machine mode Applicable model:1KW 3KW/5KW"
67	Parallel Line Differ	"Parallel machine each machine mains voltage or frequency error is too large When the mains voltage and frequency error of each machine is detected, it will be restored Applicable model: 1KW 3KW/5KW"
68	Low SOC off	The lithium battery SOC is below the set value Disable low SOC shutdown function, disable BMS communication function, or restore when SOC returns to + 5% of set value Applicable model:1KW/3KW/5KW"
69	Low SOC	When the lithium battery SOC is lower than the set value + 5% (in utility mode or battery mode) or lower than the set value + 10% (in standby mode), the Low SOC shutdown function will be activated. To resolve this, the Low SOC shutdown function can be disabled, or the BMS communication function can be disabled, or the SOC can be restored to the set value + 10%. This issue applies to the 1KW/3KW/5KW model.

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in harsh environment, as described in this manual.
- The fault or damage is caused by installation, repairs, modification, or disassembly performed by a service provider or personnel not from smsenergy or his authorized partner .
- The fault or damage is caused by the use of non-standard or non-smsenergy.

components or software.

- The installation and use range are beyond stipulations of relevant international standards.
 - The damage is caused by unexpected natural factors.
- For faulty products in any of above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of smsenergy.