

6.1. Startup

ENSURE EXTERNAL AC & DC ISOLATOR ARE IN THE ON POSITION (if fitted)

Step 1. (Optional) If there are multiple battery stacks, turn on the battery switch on the right side of the battery junction box.

Step 2. On the left side of the inverter, perform as follows:

- a. Turn on BATTERY SWITCH.
- b. Turn on DC SWITCH.
- c. Press and hold the START button around three seconds until the LED indicator on the front panel is on .

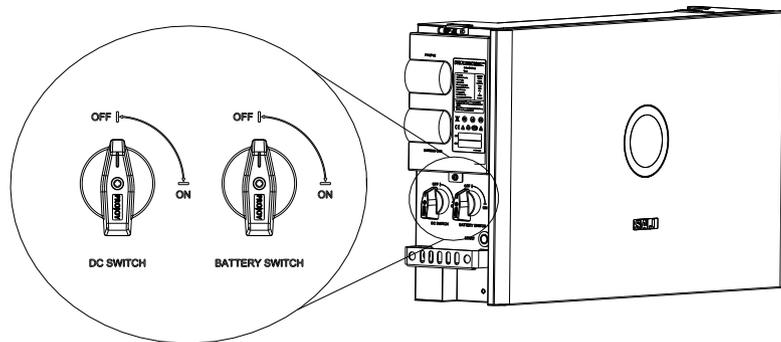


Figure 6.1. Switches on the left side of the inverter

Step 3. Check the LED indicator status on the inverter panel to ensure that the inverter is running properly.

For details, refer to section 2.5 “LED indicators on the HS3 inverter”.

6.2. Shutdown

On the left side of the inverter, perform as follows:

Step 1. Turn off DC SWITCH.

Step 2. Turn off BATTERY SWITCH.

Step 3. Press and hold the START button around five seconds. Then, release the button and wait until the LED indicator on the front panel is off .

FINALLY TURN OFF EXTERNAL AC & DC ISOLATOR (if fitted)

2.4. Ports, switches, and LED on the HS3 inverter

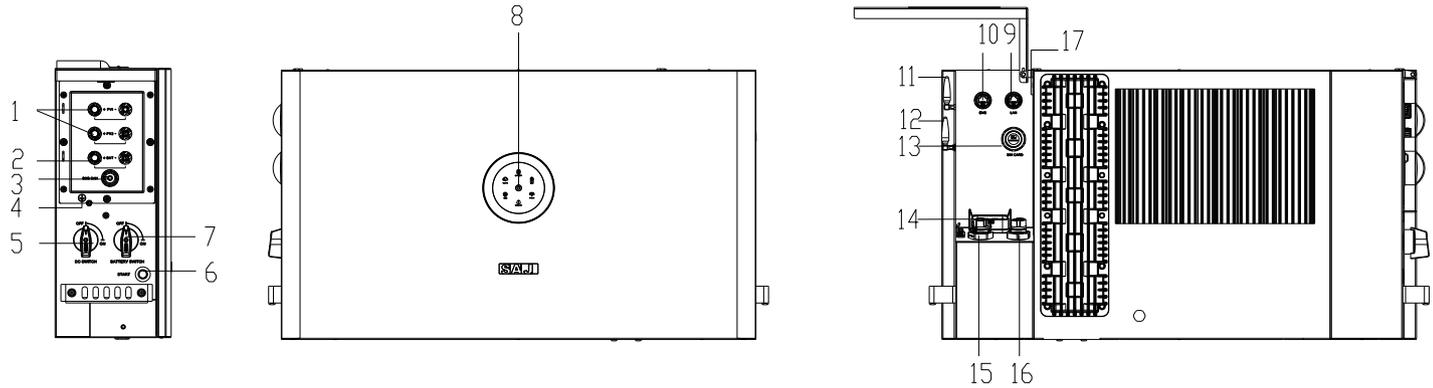


Figure 2.7. Ports, switches, and LED on the HS3 inverter

Callout	Silkscreen	Description
1	PV1 (+, -), PV2 (+, -)	PV input ports
2	BAT (+, -)	BAT+ and BAT- ports Used for paralleling connection.
3	BMS CAN	Battery communication port
4	/	Grounding port
5	DC SWITCH	Switch for controlling the PV input
6	START	Start button
7	BATTERY SWITCH	Switch for controlling battery power input and output
8	/	LED panel
9	LAN	LAN port Only available when an AIO3 module is embedded in the inverter. It is used by the AIO3 module for communication.
10	EMS	EMS port Used in the paralleling scenario.
11	WIFI	Wi-Fi/Bluetooth antenna
12	4G	4G antenna Only available when a 4G module is embedded in the inverter.
13	SIM CARD	SIM card slot. Only available when a 4G module is embedded in the inverter.

14	COMM	Communication port
15	BACK-UP	Port for connecting to the backup loads
16	GRID	Port for connecting to the grid utility
17	/	Grounding port

Table 2.1. Description of the HS3 ports, switches, and LED

2.5. LED indicators on the HS3 inverter

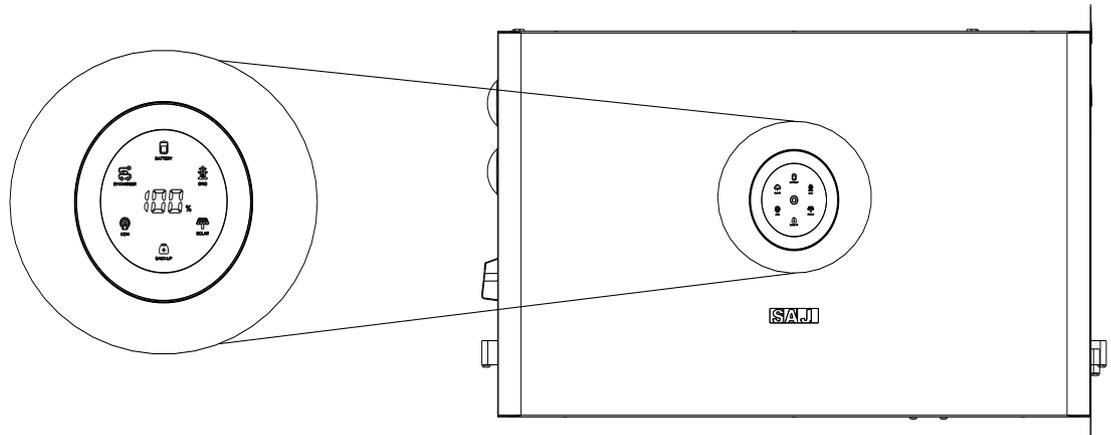


Figure 2.8. HS3 inverter LED

LED indicator	Status	Description
	Off	The inverter is powered off.
	Breathing 6s	The inverter is in initialization or standby state.
	Solid on	The inverter is working properly.
	Breathing 3s	The inverter is upgrading.
	Solid on	The inverter is not working properly.
	<i>Integer</i> (example, 50)	Battery average SOC (for example, 50%)

	--	The battery communication is lost.
 BATTERY	Solid on	The battery is working properly.
	On 1s, off 1s	The battery is not working properly.
	Off	The battery is disconnected or inactive.
 GRID	Solid on	The grid is connected and working properly.
	On 1s, off 1s	The grid is not working properly.
	Off	No grid is detected.
 SOLAR	Solid on	The PV array is working properly.
	On 1s, off 1s	The PV array is not working properly.
	Off	The PV array is not working.
 BACK-UP	Solid on	The AC-side load is working properly.
	On 1s, off 1s	The AC-side load is overloaded.
	Off	The AC-side load is disconnected or off.
 COM	Solid on	In good communication with the meter, BMS, and cloud.
	On 1s, off 1s	Lost communication with the meter, BMS, or cloud.
	Off	Lost communication with all the meter, the BMS, and cloud.
 EV CHARGER	Solid on	The EV charger is in standby mode and working properly.
	On 1s, off 3s	The EV charger is charging.
	On 1s, off 1s	The EV charger is not working properly.
	Off	The EV charger is disconnected.

Table 2.2. LED description

PV SYSTEM OWNER'S MANUAL

Ensure your inverter is not covered and is dust free at all times

Please read and understand this solar power system user manual. It contains some useful information regarding the operation of individual components of your solar power system.

Please keep this user manual in safe place for future reference.

All service and repair should be undertaken by a registered electrical solar

installer. Remember solar equipment will remain live after shutdown

procedure!

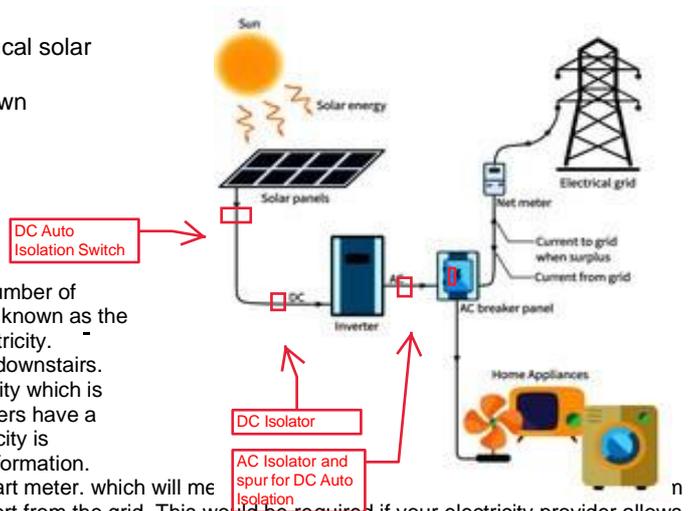
How Your System Works

The solar electric panels, or modules, are usually fitted to the roof. The number of modules will depend on the size of your system and, collectively, they are known as the solar array. The solar array converts sunlight into direct current (DC) electricity.

The DC electricity is fed to the inverter which may be either in the attic or downstairs.

The inverter converts the DC electricity to alternating current (AC) electricity which is compatible with the electricity supplied to your house from the grid. Inverters have a digital readout so you can monitor information like how much solar electricity is produced, etc. Refer to the separate inverter Owner's Manual for more information.

The standard meter located in your meter box can be replaced with a smart meter, which will measure your solar system into the electrical grid as well as the electricity you import from the grid. This would be required if your electricity provider allows payment for export. You can look at how your system is performing on an app also. As backup there will be a meter installed beside your Inverter.



During the Night

At night your solar power system automatically shuts down with no sunlight if you don't have a battery (the inverter goes into "overnight shutdown mode") with a battery installed the inverter will not turn off at night.

Loss of Mains Grid Supply

In the event of an electricity grid failure, the inverter will automatically detect this and will shut the system off (shutdown condition). This is an important safety feature and complies with the EN50549 grid standard for Ireland. This prevents possible electrical injuries to the ESB maintenance personnel that may be repairing the mains grid electrical network. If you have a battery in your system then you will have power on a dedicated socket for essential loads such as fridge, Internet, or phone charge. The automatic isolation switch is located within 1.5 meters from your solar array, this is automatic and does not need to be manually switched. It automatically shuts off the DC power coming into the house when there is a power cut or the AC isolator is turned off.

Solar Power System Start-up Procedure

Your system will have the following switches: **AC isolator located near the Inverter, and a DC isolator at the inverter AND a battery isolator if you have battery installed**

A dedicated RCBO Switch will be labeled in your Consumer Unit (AC breaker panel) also. This will also isolate the AC side of the inverter. This is only for maintenance and overload protection.

SWITCHING SYSTEM ON

Switch **ON** the AC isolator

Switch **ON** the DC isolator

If you have a battery, Switch on Battery Isolator *follow specific manufacturer guides

After the system is switched ON, the inverter will run through a testing and initializing process. It will then begin correct operation and you will be able to read production etc. on the front screen.

SWITCHING SYSTEM OFF

Switch **OFF** the AC isolator

WAIT 30 SECONDS

Switch **OFF** the DC isolator

Follow specific

manufacturer guides

Operating & Safety instructions

Your solar electricity system is designed for automatic operation with no need for user interaction. There are no moving parts and, apart from normal performance monitoring, there is no need for the owner to intervene in its operation.

In the case of *mains grid supply failure*, the inverter will be automatically and immediately disabled. This is known as *anti-islanding*. Once the power has been restored, the inverter will be automatically re-enabled.

If you notice your system is not operating correctly, please call your system supplier and they will arrange to send a technician to resolve the problem.

- Do not attempt to service the system yourself – contact installer
- In the event of an “Earth Fault Alarm” your system should be shut down immediately, if it is not shut down automatically. Please contact Installer immediately to have your system inspected.
- All service work must be carried out in strict compliance with all local and national electrical codes and standards.
- Review and follow all safety instructions supplied with all components of the solar electricity system.
- Avoid working on the system in wet or damp conditions.
- Remove all jewelry such as rings, bracelets, etc. prior to servicing the system to reduce the risk of electric shock.
- The solar array will generate electricity during sunlight. They should be covered or disconnected prior to servicing.
- Do not attempt to clean or come in contact with the surface of a solar module with broken glass. This could result in a dangerous electric shock.
- Be aware that power may be present at any point in electrical circuits despite the opening of circuit breakers.
- Circuit breakers can trip automatically if problems occur. If the circuit breaker is switched back to the closed or “on” position and it immediately trips back to the open or “off” position an ongoing problem is indicated.
- Do not substitute materials supplied with the solar electricity system.
- Appropriate precautions must be taken when working on rooftops or at heights in accordance with local and national occupational health and safety regulations.

Maintenance

Your solar power system requires little maintenance, as there are no moving parts to fail or adjust. For your safety, we do not recommend that you attempt any self-service unless you are suitably qualified.

The solar panels work best when clean. In Ireland, regular rainfall will ensure that panels are kept clean provided there is a slope on the panels. However, if they become soiled by bird fouling or foliage, they can be cleaned with cold water. It is recommended to check that the solar panels have minimal shading from new vegetation or surrounding objects.

We strongly recommend that you do not climb onto the roof, unless you are qualified and trained in occupational health and safety procedures.

Plant and tree growth that can cause shading at different times of the year should be monitored and dealt with. Likewise, leaves and other debris coming to rest on the solar modules should be removed.

Always remember that your system will be generating electricity during daylight hours and care should always be taken to eliminate the risk of electric shock.

The following maintenance schedule is recommended.

Weekly	6 Monthly	Yearly
Check to make sure the inverter is working correctly by checking the LCD screen, or by checking online monitoring if you have a WIFI enabled monitoring system. Check the inverter operation (e-today, e-total etc.) to verify that production is consistent with the prevailing weather conditions and system size	<p>Check for vegetation growth that may be shading the panels and cut back if required</p> <p>Visually inspect the panels for any damage</p>	Visually check that the PV array and mountings are firm and show no corrosion or damage, visually inspect the inverter for build-up of dust and clean with a dry cloth if required.



DANGER: The inverter operates at very high voltages. There is risk of fatal electrical shock if the inverter is opened during use. The inverter must only be opened by technicians for either maintenance or modifications.



DANGER: Do not touch or pull any of the electrical wiring cables around the inverter. Do not remove the front cover of the inverter. Do not switch the system on if there are damaged or exposed electrical cables due to risk of fatal electrical shock!



DANGER: Do not touch or come in contact with a solar module if it is found to be broken or has cracked glass, as this could result in a fatal electrical shock.



WARNING: We recommend using professional services when working at heights. It is recommended that only qualified personnel who are trained and hold current certification attempt maintenance activities on roofs due to the potential hazards when working at heights.

Warranty

Your solar electric system comes with the following warranties from date of sale:

- Solar electric modules 10 to 30 year with performance of at least 20 to 30 years - check your data sheet.
- Inverter – 5- or 10-year extension - check your data sheet.
- Roof mounting frames –10 years check your data sheet.

This warranty does not cover the following conditions:

- Your existing electrical installation, wiring, and switchboard or fuse box.
- Any malicious damage.
- Any damage caused by vermin, animals or pests.
- Any consequential or other loss suffered by you in connection with the installation of our products or our products failing or breaking.
- Any damage to your property (other than products we sold you) caused by our products failing or breaking.
- Labour for the disconnection and reconnection of the components.
- Consequential damages including but not limited to loss of revenue.
- Duties, import/export fees or costs and other general administrative costs

Warranty Exclusions

These conditions shall cause the system warranty to become void.

- Any work associated with rectification of these conditions may incur a service charge and costs for parts should they be necessary.
- Any service required to electrical wiring. Major variations or faults in electrical energy supply, causing damage to the Inverter or other supplied equipment.
- Accidental breakage is not covered by this warranty, and should be added separately to your general household insurance policy.

PLEASE CHECK SPECIFIC MANUFACTURERS WARRANTY FOR DETAIL.

IMPORTANT REMINDER

Please keep this owner's manual in a safe and easily locatable place *together with all other documentation supplied with your system.*

In the case of a service being required, please supply all the documentation to the service technician as the information contained therein will be useful to that technician. Note that the manufacturers' warranties may be voided if the system is serviced or interfered with by an unqualified person.

Please call us to arrange a yearly service to maintain your system.
www.ftenergy.ie