User Manual

Home Energy Storage System

Soluna S4 EU-A36

Mar.2020| Revision A.0

About this manual

This manual describes how to install the Soluna S4 EU-A36. Reading this manual before you attempt to install the product, and following the instructions throughout the installation process. If you are uncertain about any of the requirements, recommendations, or safety procedures described in this manual, contact Soluna immediately for advising and clarification. The information included in this manual is accurate at the time of publication. however, with regards to the product design and technical specification updates, our company reserves the right to make changes at any time without prior notice. e. In addition, the illustrations in this manual are meant to help explain system configuration concepts and installation instructions. The illustrated items may different from the actual items at the installation location.

Content

1 Safety precautions ---- 4

1.1 Warning signs ---- 5

1.2 Safety guide ---- 6

2 Product Introduction ---- 9

2.1 Features ---- 9

2.2 Application ---- 9

2.3 Outline Dimensions ---- 10

2.4 Functional description ---- 11

2.5 Technical data ---- 12

2.6 Appearance ---- 15

3 Installation ---- 18

3.1 Installation tools ---- 18

3.2 Installation spacing ---- 20

3.3 Wire specifications ---- 20

3.4 Installation step ---- 20

4 How to operate Soluna ---- 30

4.1Turn on or turn off Soluna ---- 30

4.2 How to operate LCD ---- 31

4.2.1 Place of LCD ---- 31

4.2.2 How to check the information of LCD screen ---- 32

4.2.3 How to check the information of “Status “ icon ---- 32

4.2.4 How to Set parameters of Soluna system ---- 35

4.2.5 How to check the information of “data” icon ---- 39

4.2.6 How to check the production information of Soluna system ---- 41

4.2.7 How to check the fault information of Soluna system ---- 41

5 How to maintain ---- 42

5.1 FAN maintenance ---- 42

5.2 Clearance ---- 42

5.3 Fault information handling ---- 42

6 How to use the generator & AC couple function ---- 44

7 Contact us ---- 44

1 Safety precautions

Energy storage integrated machines are designed and tested strictly in accordance with relevant international safety standards. As an electrical and electronic device, all relevant safety regulations must be strictly complied during installation, operation, and maintenance. Incorrect use or misuse may result in:

- Injury to the life and personal safety of the operator or other people.
- Damage to the machine or other property belongs to the operator or other people.
- This chapter mainly various warning symbols in operation manual and provides safety instructions for the installation, operation, maintenance and use of energy storage integrated machines.

Statement

Our company will not responsible for any consequence caused by any of the following events.

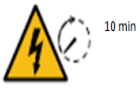
- Damage caused by transportation.
- The storage conditions do not meet the requirements specified in the manual, resulting in damage.
- Incorrect storage, installation, and use.
- Unqualified personnel install and operate the machine.
- Failure to comply with the operation instructions and safety precautions in this manual.
- Operate in extreme environments which are not covered in this manual.
- Exceed the operation range of parameters that specified in the technical specification.
- Unauthorized disassembly, modification, or modification of the software code.
- Device damage caused by abnormal natural environment (force majeure, such as lightning strikes, earthquakes, fires, storms, etc.)
- Warranty expiration without extension of the warranty service.
- Installation or use in environment which are not specified in related international standards

1.1 Warning signs

Warning signs are used to warn you about the conditions that may cause severe injury or damage to the device. They instruct you to exercise caution to prevent danger. The following table describes the warning signs used in this manual.

Sign	Name	Description
	Danger	Serious physical injury or even death may occur if related requirements are not followed
	Warning	Physical injury or damage to the devices may occur if related requirements are not followed.
	Electrostatic discharge	Damage may occur if related requirements are not followed
	Hot sides	Sides of the device may become hot. Do not touch.
Note	Note	Steps to take for ensuring the proper running of the device.

1.2 Safety guide

	• After receiving this product, first confirm the product package is intact. If any question, contact the logistic company or local distributor immediately. • The installation and operation of the machine must be carried out by professional technicians who have received professional trainings, and thoroughly familiar with all the contents in this manual and the safety requirements of the electrical system. • Do not carry out connection/disconnection, unpacking inspection and unit replacement operations on the machine when power source is applied. before wiring and inspection, users must confirm the breakers on DC and AC side of inverter are disconnected and wait for at least 10 minutes
	• Ensure there is no strong electromagnetic interference caused by other electronic or electrical devices around the installation site. • Do not refit the machine unless authorized. • All the electrical installation must conform to local and national electrical standards. • Ground with proper technics before operation
	• Do not open the surface cover of the machine unless authorized. The electronic components inside the machine are electrostatic sensitive. Do take proper anti-electrostatic measures during authorized operation.
	• Do not touch the housing of the machine or the radiator to avoid scald as they may become hot during operation
	• The machine needs to be reliably grounded.
	• Ensure that DC and AC side circuit breakers have been disconnected and wait at least 10 minutes before wiring and checking.
Note: Technical personnel who can perform installation, wiring, commissioning, maintenance, troubleshooting and replacement of the energy storage inverters must meet the following requirements:	
• Operators need professional training. • Operators must read this manual completely, and master the related safety precautions. • Operators need to be familiar with the relevant safety regulations for electrical systems. • Operators need to be fully familiar with the composition and operating principle of the entire energy storage system, and related standards of the countries/regions in which the project islocated. • Operators must wear personal protective equipment.	

1.2.1 Transportation and installation

	• Keep the package and unit complete, dry and clean during storage and transportation. • This machine is heavy. Please remove and install it with at least Two people. • To ensure the normal and safe operation of the energy storage integrated machine and avoid personal injury, please select proper handling and installation tools, and take mechanical protection measures to protect personal safety, such as wearing smashing shoes, coverall and so on. • Only qualified electricians are allowed to install the machine. • Do not put and install the machine on or close to flammable or explosive materials. • Do not install the machine in a place where children and other people can easily touch it. • To avoid a risk of electric shock, please remove rings, bracelets, and other metal jewelry on your hands before installation and electrical connection. • The solar cell modules exposed to the sunlight may generate dangerous voltage. Users must cover the cell modules with fully light shading materials before electrical connection. • The input voltage of the machine should not exceed the maximum input voltage, otherwise damage may occur. • The machine is not suitable for the positive or negative grounding systems of solar cell modules. • Ensure the proper grounding of the inverter. • Ensure reliable installation and electrical connection.

1.2.2 Grid-tied operation

Note	• Only qualified electricians are allowed to operate the machine under the permission of local power departments. • All electrical connections must meet the electrical standards of the countries/regions in which the project is located. • Ensure reliable installation and electrical connection before operation. • Do not open the cover of the machine when the machine is working or any circuit is connecting to the machine.

1.2.3 Maintenance and replacement

	• Only qualified electricians are allowed to perform the maintenance, inspection, and component replacement of the machine. • Please contact the distributor or manufacturer for maintenance. • In order to avoid irrelevant personnel from entering the maintenance area during maintenance, temporary warning signs must be placed to warn non-professionals to enter or use fence for isolation. • Before carrying out any maintenance operations, all input power to the machine must be disconnected first, and wait for at least 5 minutes until the internal parts of the machine are fully discharged. • Please follow the electrostatic protection norms, and take correct protective measures because there are mostly electrostatic sensitive circuits and devices in the machine. • Do not use parts and components not provided by our company during maintenance. • Restart the machine after eliminating the faults and problems which may affect the safety and performance of the machine. • Do not get close to or touch any charged metal conductor parts of the grid or running system, otherwise electric shock or fire may occur. Please do not ignore the warning icons and instructions with “electric shock”.

1.2.4 What to do after scrapping

	• Do not dispose of the machine together with household waste. The user has the responsibility and obligation to send it to the designated organization for recycling and disposal.

2 Product Introduction

Soluna S4 EU-A36 Home Energy Storage System can connect with solar power generation system, which ensure the users can use environmentally-friendly energy 24 hours at any time. ESS store the energy generated by PV, and uses it whenever needed, not only reduce the purchase of electricity from the grid, but also improves the household energy self-consumption and saves the electricity cost. Soluna integrated energy storage solve solution, help users with achieving maximize the self-use of green energy.

2.1 Features

- intelligent power management
- Simple user controls, power data history analysis, and programming
- Capacitive touch screen interface
- Secure battery access door
- height-adjustable threaded appliance-grade feet for stability and level appearance

2.2 Application

- Self use
- Peak Shaving
- Emergency power

2.3 Outline Dimensions

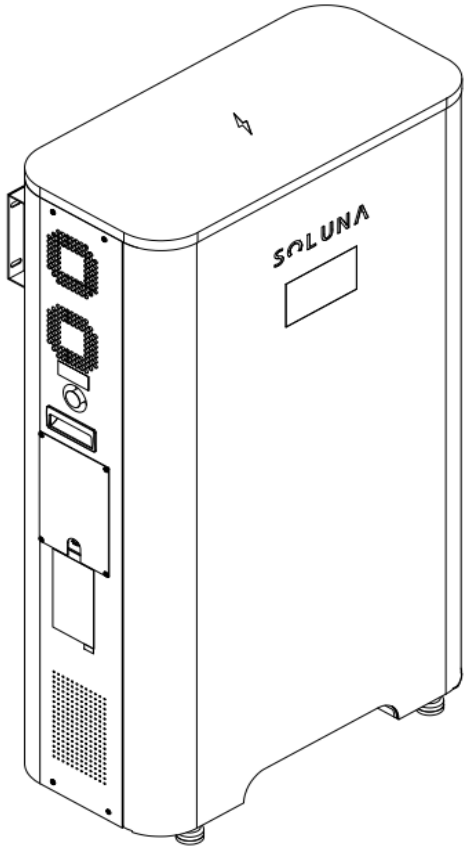


Figure 2.1 outline dimension

Width	700	mm
Depth	340	mm
Height	1230	mm
Weight	145	kg

2.4 Functional description

2.4.1 basic principle of Soluna S4 EU-A36

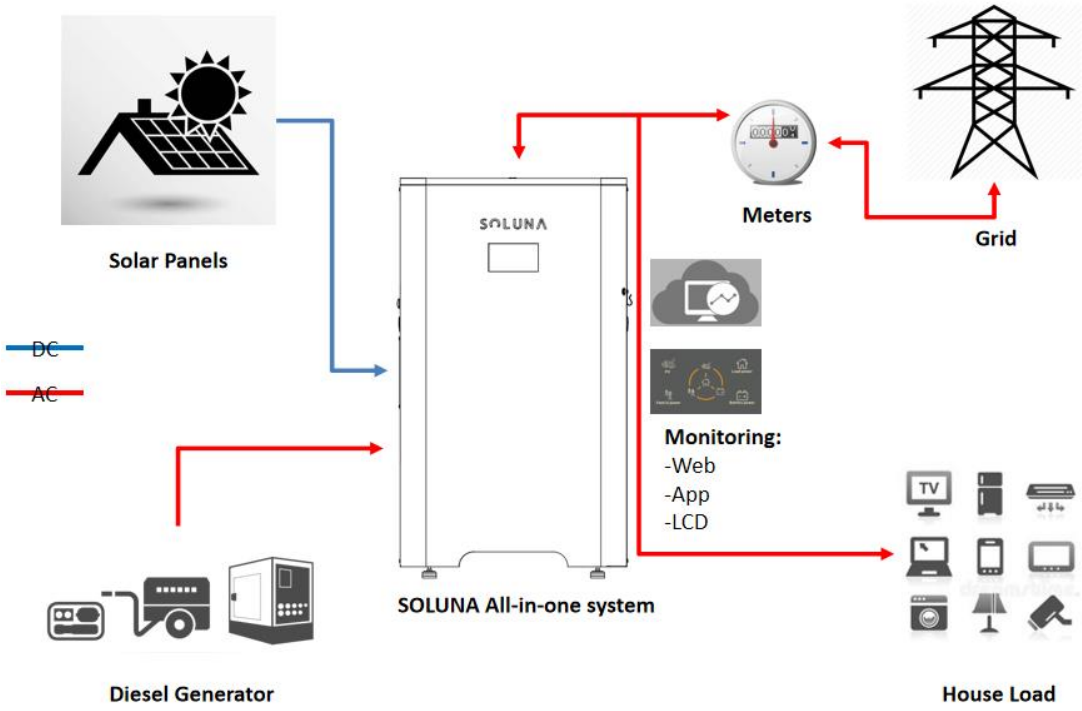


Figure2.2 basic principle of Soluna S4 EU-A36

2.4.2 Working mode

Soluna S4 EU-A36 has the following working modes for your home energy storage system.

Mode 1: In daytime, PV power will charge the battery in priority, if battery is full, PV power is used to power the loads, then excess power sell to the grid.

Mode 2 : At night time, Battery power the loads, if battery is not sufficient, grid will supplement.

Mode 3 : If grid malfunction or in no grid region, PV and battery can power the loads together.

Mode 4 : When the battery is low and PV power is unavailable. Grid can charge the battery and at the same time, Grid will power the loads.

Mode 5 : Generator can charge the battery bank.

Mode 6 : If Time Of Use function is enabled, will ensure battery remaining power and grid sell power is adjustable.

Mode 7: UPS Function can ensure important loads still powered in case grid suddenly fail down.

2.5 Technical data

2.5.1 Technical data of System

PV input	
Max. recommended DC power （W）	3600
Max. DC voltage （V）	500
Nominal DC operating voltage （V）	360
MPPT voltage range （V）	125-425
Vdc range @ full power (Vdc)	300-425
Max. input current （A）	11
Max. short current （A）	16
Number of MPPT trackers	1
Strings per MPPT tracker	1
AC Input & AC Output	
Normal Voltage (VAC)	230,Single phase(L/N/PE)
Frequency (Hz)	50
Max. AC output current (A)	18
Max. AC input current (A)	18
Max. continuous Power (kW)	3.6
Power factor range	-0.8～+0.8
Off-Grid AC Output	
Normal Voltage (VAC)	230,Single phase(L/N/PE)
Frequency (Hz)	50
Max. AC output current (A)	18
Max. continuous Power (kW)	3.6

Power factor range	-0.8～+0.8
Battery data	
Battery type	Lithium(LFP)
Module number	1
Nominal Storage capacity (kWh)	3.84
Usable Storage Capacity (kWh)	3.07
Battery capacity (Ah)	75
Normal voltage (V)	51.2
Voltage range (V)	42-58
Max. charge current (A)	50
Max. discharge current (A)	50
DOD	80%
Cycle life	6000
Regular parameters	
Protective class	Class I
Overvoltage category	OVC II(PV) , OVCIII(AC main Grid)
Dimension (mm)	W*D*H=700*340*1230
Weight (kg)	145
Display	7" graphic LCD
Communication	WIFI,CAN
Operating temperature range (°C)	-10～+40
Storage stability range (°C)	-20～+60
Relative humidity	0~95%
Altitude (m)	<2000
Cooling methods	Forced airflow
Ingress protection	IP20
Condition	Indoor conditioned
Certificates	IEC62109 CE-LVD EN 62477-1: 2012+ALL: 2014
Warranty	
Please refer to SOLUNA WARRANTY CONDITIONS	

2.5. 2 Technical data of battery module

Physical Characteristics	
Width	205 mm
Depth	678 mm
Height	436 mm
Weight	60 kg

Electrical Characteristics	
Battery type	LFP
Total Energy Capacity	3.84 kWh
Usable Energy Capacity	3.07 kWh
Battery Capacity	75 Ah
Voltage Range	40~58.4 V
Nominal Voltage	51.2 V
Charge / Discharge current (Nominal)	19A/38A
Max. Charge/Discharge Current	50/50 A
Max. Charge/Discharge Power	2.5 kW
DOD	80%
Internal resistance	⩽60 mΩ
Cycle life	⩾6000
Battery Pack Round-Trip Efficiency	>95%
DC Disconnect	Contactor
	Fuse
BMS	
Power consumption	<3W (work),
	<100mW (sleep)
Monitoring parameters	System Voltage
	System Current
	Cell Voltage
	Cell temperature
Communication	CAN
System Configuration	
Module parallel	1~4 Parallel
Operating Conditions	
Installation Location	Indoor
Operating Temperature	-10~45 ℃
Operating Temperature (Recommended)	15~30 ℃
Storage Temperature	-20~60 ℃
Humidity	5%~95%
Altitude	Max. 2,000 m
Cooling Strategy	Natural Convection
Reliability & Certification	
Certificates	Cell：UL1642
	Battery Module： IEC62619 / UL1973
Transportation	UN38.3
Ingress Rating	IP20
Warranty	
Please refer to SOLUNA WARRANTY CONDITIONS	

2.6 Appearance

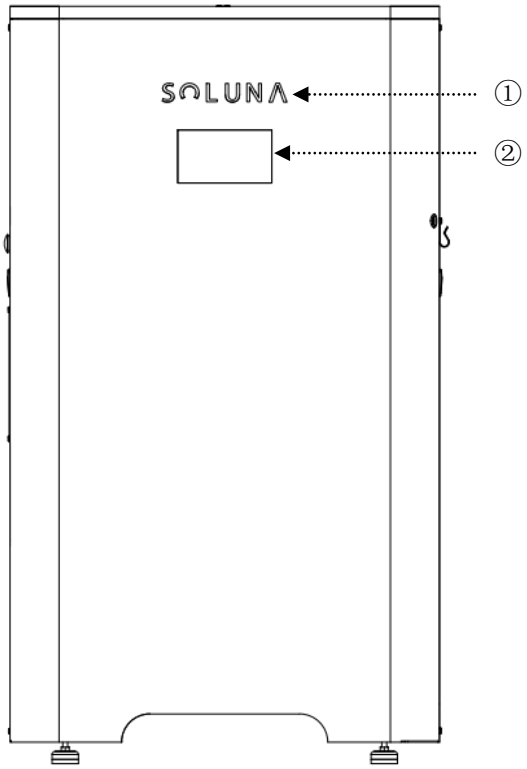


Figure 2.3 Appearance

Number	Name	Remark
①	Soluna brand	
②	LCD panel	

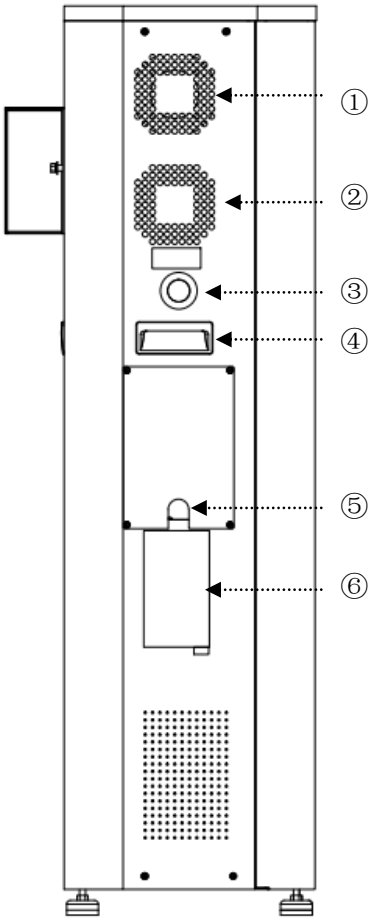


Figure 2.4 Appearance

Number	Name	Remark
①	FAN outlet	
②	FAN outlet	
③	Emergency Stop	
④	Handle	
⑤	Incoming wire port	
⑥	Label	

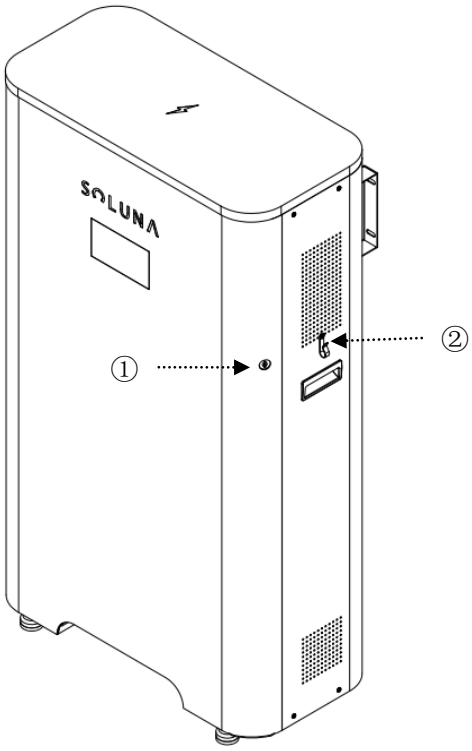
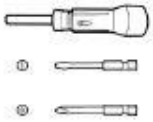
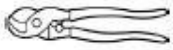


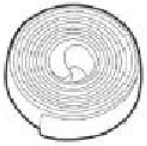
Figure 2.5 Appearance

Number	Name	Remark
①	Door lock of system	
②	Door Key	

3 Installation

3.1 Installation tools

Species	Tools and instruments		
Installation	 Impact drill (bit Φ 10mm)	 Torque socket wrench (sleeve opening: 13mm, suitable for M8 bolts, torque range: 0 N•m-15 N•m)	 Torque wrench (opening size: 13mm, 33mm, torque range: 0 N•m-15 N•m)
	 Diagonal pliers	 Wire stripper	 Torque screwdriver (cutting head: M4, M6, torque range: 0 N•m-5 N•m)
	 Rubber hammer	 Utility knife	 Wire cutters
	 Wire crimpers	 Open spanner	 Cable tie
	 Vacuum cleaner	 Multimeter (DC voltage range ≥ 600VDC)	 Marking pen

Species	Tools and instruments		
	 Steel tape	 Level ruler	 Hydraulic clamp
	 Heat-shrinkable tubing	 Hot air heating gun	-
Personal protective equipment	 Safety gloves	 Safety goggles	 Dust mask
	 Safety shoes	-	-

3.2 Installation spacing

In order to ensure good ventilation of the energy storage integrated machine, please reserve enough installation spacing around the machine during installation.

Position	Min spacing	Remark
Side spacing	100cm	
Back spacing	10cm	It needs to be installed against the wall

Note: For detailed requirements about the narrowest maintenance channel, escape route, etc., refer to the applicable standards of the country/ region where the project is located.

3.3 Wire specifications

In order to standardize the specification of ac and dc connectors or terminals of compatible inverters, the following requirements are required for connecting ac and dc wires of corresponding types of inverters

PV side	GRID side	Load
It is recommended to use 4 mm^2 of wire	It is recommended to use 4 mm^2 of wire	It is recommended to use 4 mm^2 of wire

3.4 Installation step

3.4.1 Unpacking confirmation

Before unpacking, check carefully whether the product information in the order is consistent with that on the nameplate of the package box, and whether the product package is intact. If there is any question, please contact the supplier timely.
Store the idled machine in its original package, and take anti-moisture and anti-dust measures. after taking the machine out of the box, check the following items:

Item	Name	Qty (pcs)	Remark
1	System case	1	
2	Battery module	1	
3	key	1	
4	Screws-M6*12	10	
5	Screws-M5*8	1	
6	Screws-M4*6	6	
7	Expansion bolts-M8*100	4	
8	Module mounting bracket	1	
9	Wall mounting bracket	1	
10	PV connector removal tool	1	
11	User manual	1	
12	PV connector	2	
13	Current sensor	1	

3.4.2 Basic installation requirement

The energy storage integrated machine cabinet is IP20 and suitable for installation in dry, dust-free environments. According to EMC standards, the energy storage integrated machine cabinet is designed to meet the installation requirements in a home environment. Select the installation site according to the following requirements:

●The installation site should be well ventilated, free from rain and direct sunlight;

●The installation floor should be dry and flat. It is strictly forbidden to have water

on the ground; ensure that the ground level is not shaken and can fully carry the weight of the energy storage integrated machine cabinet.

- ●The temperature in the installation environment should range from -10 °C to 40 °C; the relative temperature should range from 4 to 100 %.
- ●Reserve enough installation spacing between the front, rear, left and right, top and wall of the energy storage integrated machine cabinet to ensure good ventilation, heat dissipation, installation and maintenance, and safe escape.
- ●There are no combustible gas and flammable materials nearby.
- ●The installation environment should be clean.

3.4.3 Installation procedures

The mechanical installation steps are as follows:

Step1 user can find 1unit of battery module and 1unit of the case of Soluna after opening the packing box

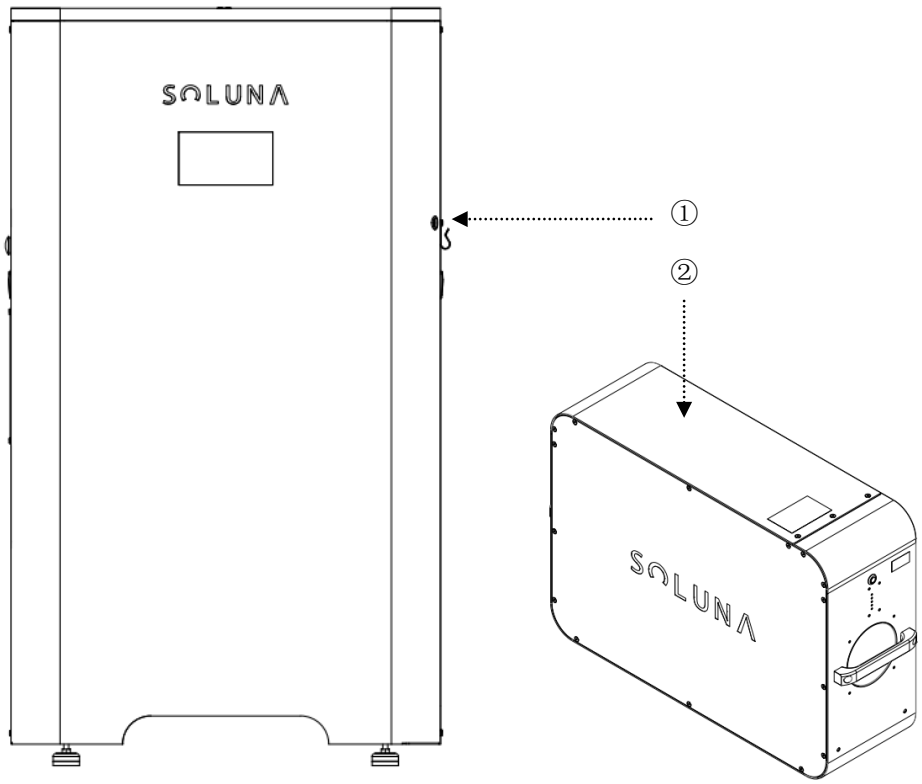


Figure 3.1 battery module & system case

Number	Name	Remark
①	System case	
②	Battery module	

Step2 The system is installed against the wall

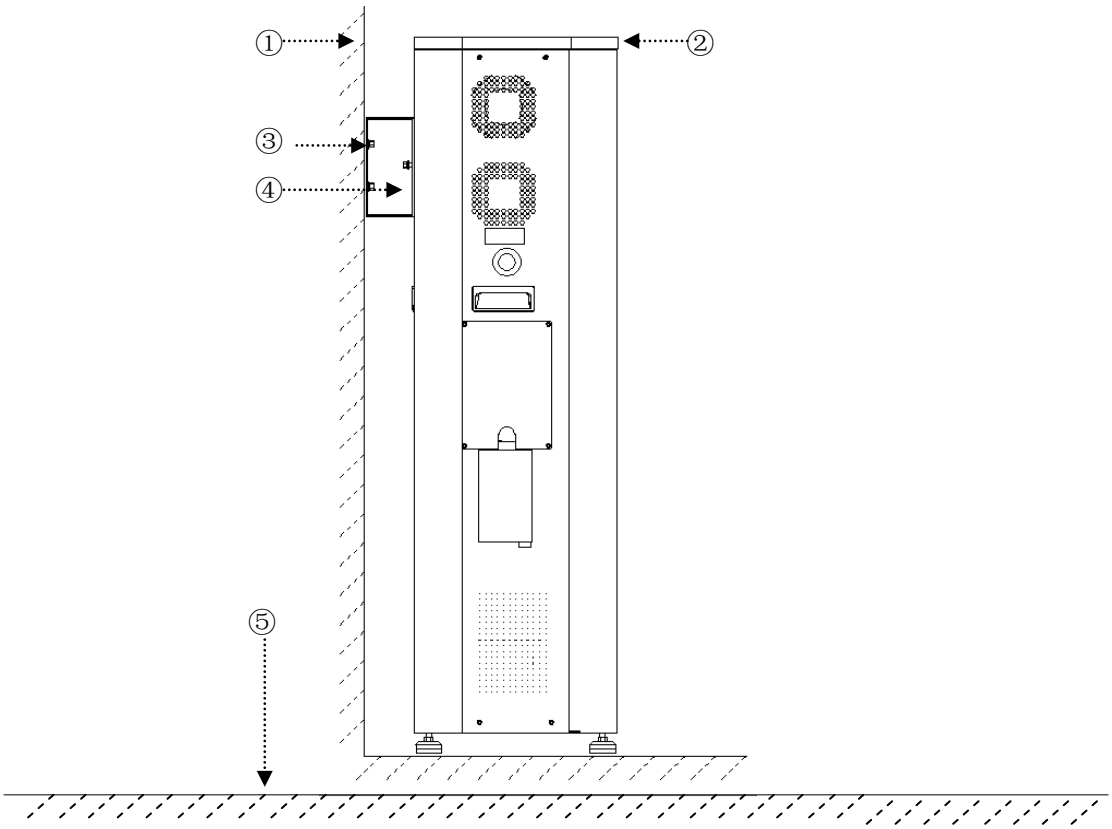


Figure 3.2 installation location

Number	Name	Remark
①	Wall	
②	Soluna System	
③	Expansion Screw	
④	Fixed Bracket	
⑤	Ground	

Step3 Open the door of Soluna system, and open the case of battery module

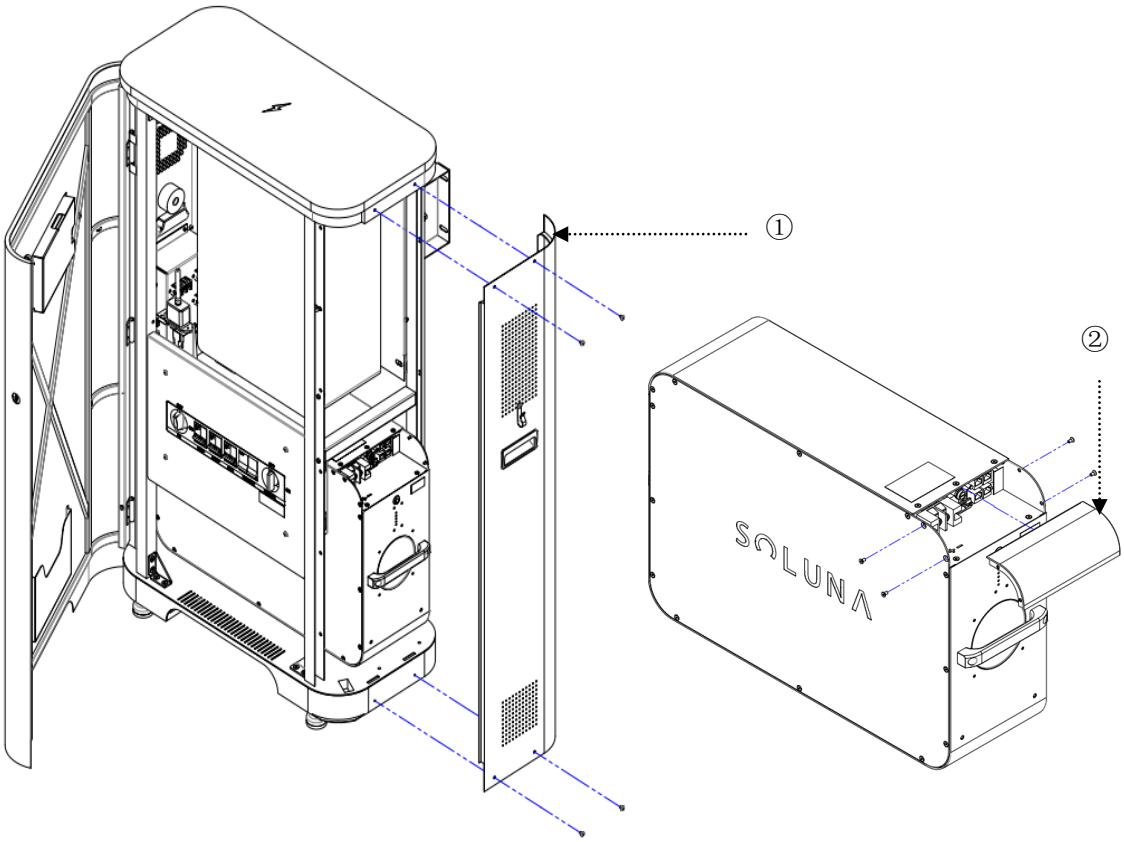


Figure 3.3 open the door of Soluna system & battery module

Number	Name	Remark
①	System case	
②	Case of Battery module	

Step4 : Push the battery module into the system, and lock the battery cable and plug in the CAN communication & Remote line.

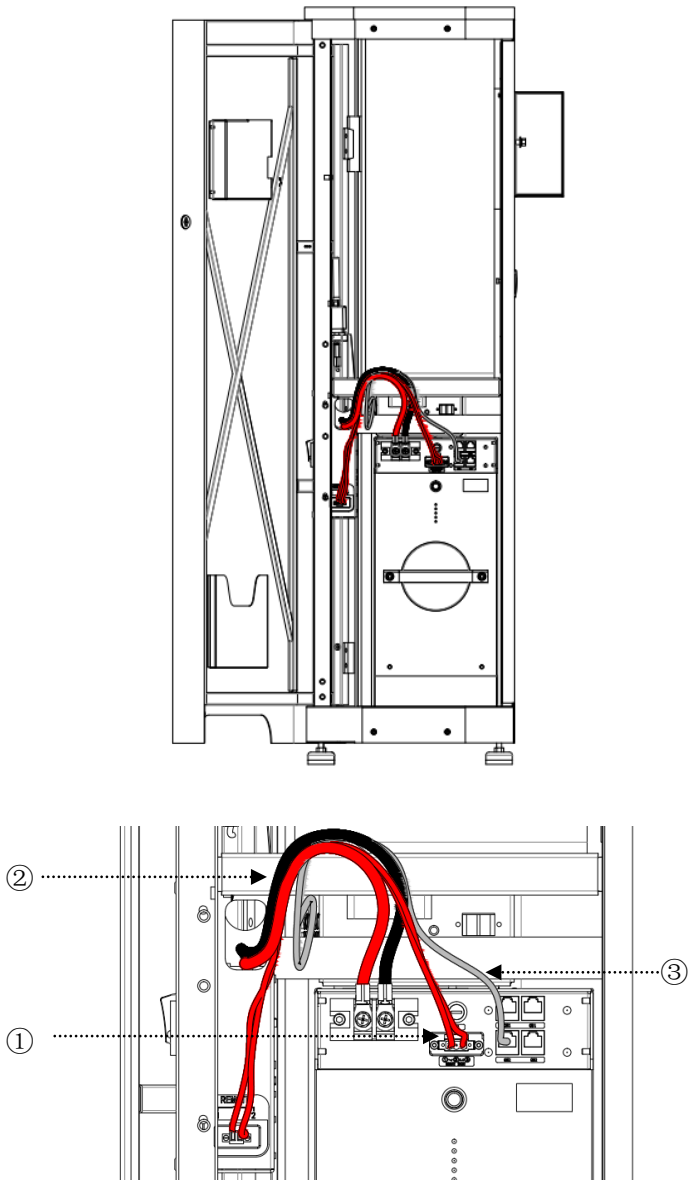


Figure 3.4 Connection for battery cable &CAN communication & Remote line

Number	Name	Remark
①	Remote wire	
②	Battery cable	
③	CAN communication lie	

Step 5 Fixed battery module and Close the door of Soluna system.

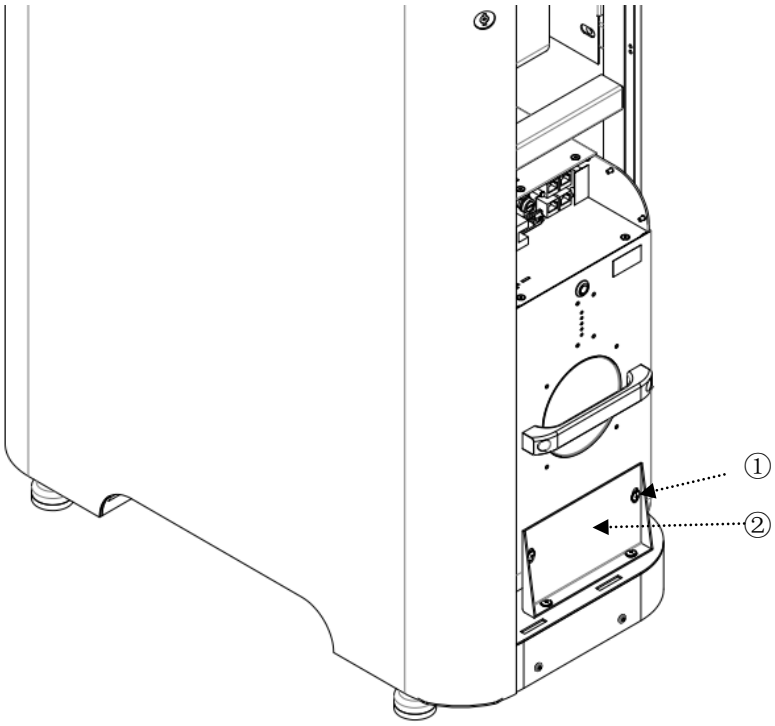


Figure 3.5 Fixed battery module

Number	Name	Remark
①	Combination screw	
②	Fixed bracket	

Step6 external circuit connection (PV\Grid\Load)

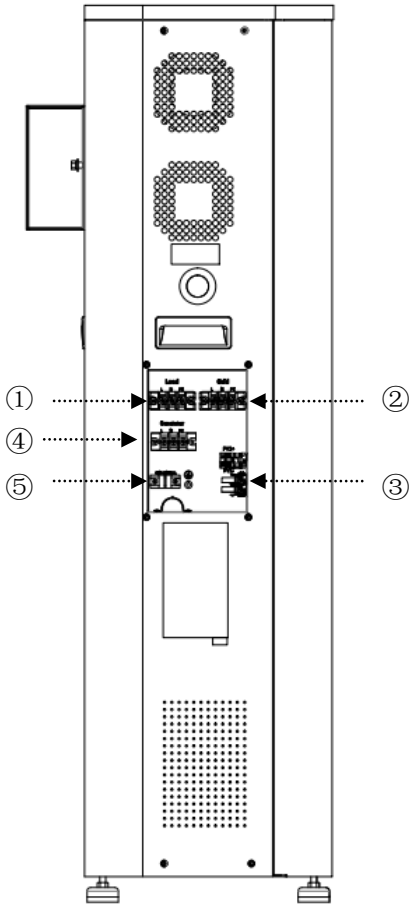


Figure3.6 external circuit connection (PV\Grid\Load)

Number	Name	Remark
①	Load connector	
②	Grid connector	
③	PV connector	
④	GEN connector	
⑤	GEN control port	

PV connection

	Only qualified PV strings under the local electrical safety laws and regulations and comply with the technical parameters of this manual are allowed to connect to the Soluna series energy storage integrated machines. the PV string connected to the energy storage integrated machine must adopt the DC connector configured especially for the energy storage integrated machine, do not use other connection devices without authorization from our company, otherwise damage to the device, unstable operation or fire may occur, and our company will not undertake quality assurance or assume any direct or joint liability thereof.

Note:

It is recommended to use 4mm²of wire for PV connecting wire.

PV terminal crimping------Terminal crimping torque 3.6–4.6 N•m .

- Ensure that the maximum open circuit voltage of each PV string is not higher than the maximum input voltage of the energy storage integrated machine under any circumstances.
- It is forbidden to connect the PE wire (ground wire) to the positive and negative poles of the PV strings, otherwise it will cause damage to the energy storage integrated machine.
- Ensure that the PV string polarity matches the PV connector, otherwise the energy storage integrated machine will be damaged.
- The insulation resistance of the PV panel to the ground should be greater than the safety regulation, otherwise there will be electrical hazards.
- Ensure the wires of the cable correspond to the connector terminals, and tighten the screws. the crimping torque of the screws is 1.5–2.5 N•m.
- Use a multimeter to measure the voltage of the DC input string, verify the polarity of the DC input cable, and ensure that the voltage of each string is within the allowable range of the machine.

Grid & Load connection

	Only qualified AC transmission cables under the local electrical safety laws and regulations and comply with the technical parameters of this manual are allowed to connect to the Soluna series energy storage integrated machines

Recommended wire specifications for safe system operation are as shown in the following table.

GRID side	LOAD side
It is recommended to use 4 mm² of wire	It is recommended to use 4 mm² of wire

Terminal crimping of wires L, N, and PE of the mains and load cables
Terminal crimping torque 3.6–4.6 N•m

Note:

- Before connecting the AC power grid cable to the energy storage integrated machine, the lightning protection and short circuit protection measures must be taken in accordance with the local electrical safety regulations. The PE cable (grounding cable) of the machine must be reliably grounded.
- Connect the three wires L, N, and PE of the single-phase public power grid to the corresponding AC terminals, fasten them, and tighten the screws. The crimping torque is 1.5–2.5 N•m.
- Connect the three wires L, N, and PE of the load to the corresponding load terminals, fasten them, and tighten the screws. The crimping torque is 1.5–2.5 N•m.

Step7 Electrical connection

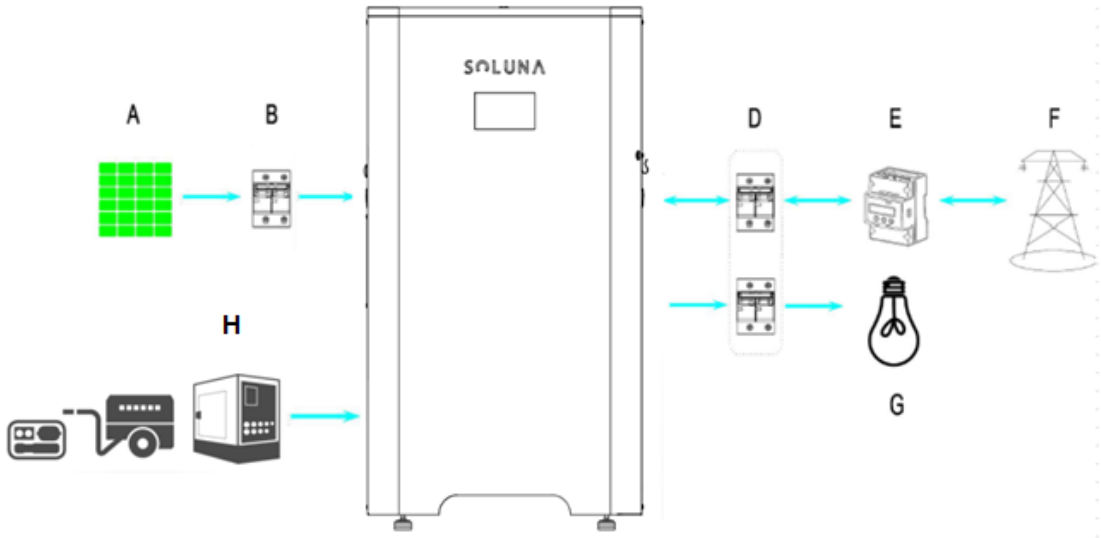


Figure 3.7 Electrical connection

Number	Name	Remark
A	PV string	
B	PV side breaker (DC 1000V,20A,4P)	
C	Soluna S4 EU-A36	
D	AC side breaker (AC250V,25A,2P)	
E	Power meter	
F	Grid	
G	Load	
H	Generator	

4 How to operate Soluna

4.1Turn on or turn off Soluna S4 EU-A36 system

Turn on: Open the door, and turn on all the switch of Load/Grid/Battery/Remote.
Turn off: Open the door, and turn off all the switch of Load/Grid/Battery/Remote.
Please find the following pictures for the place of switch.

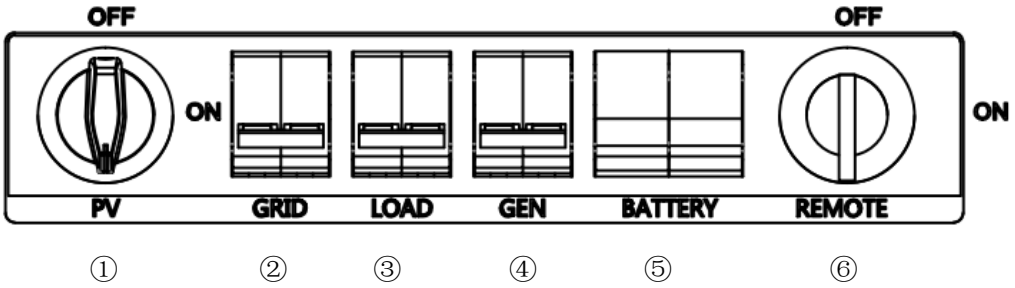


Figure 4.1 Turn on\Turn off system

Number	Name	Remark
①	PV Switch	
②	Grid breaker	
③	Load breaker	
④	GEN breaker	
⑤	Battery breaker	
⑥	Remote switch	

4.2 How to operate LCD

4.2.1 Place of LCD

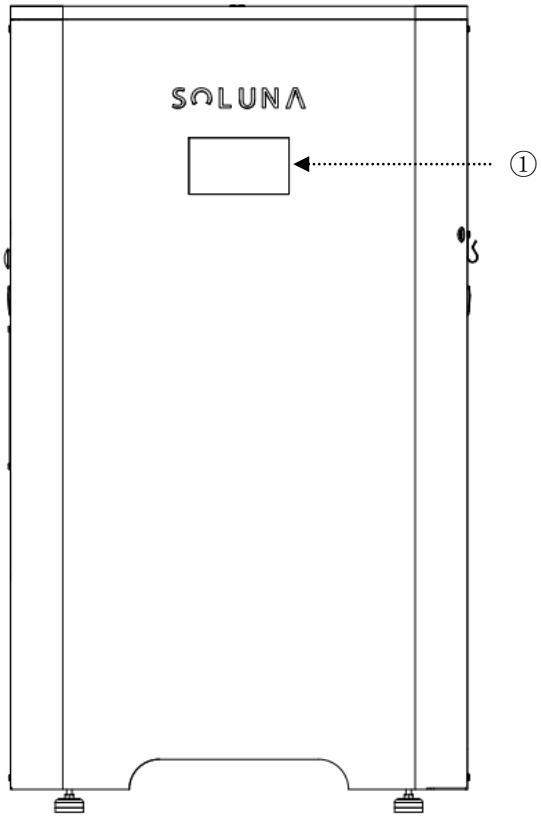


Figure 4.2 LCD

Number	Name	Remark
①	LCD panel	

Note:

The LCD is touch screen, user can touch the screen to check the information of system.

4.2.2 How to check the information of LCD screen

LCD screen including 5 icons.
（Status、Settings、Data、Production information、Battery Capacity）
Click each icon will find the relevant information.

Please find the following picture for the interface of LCD screen.

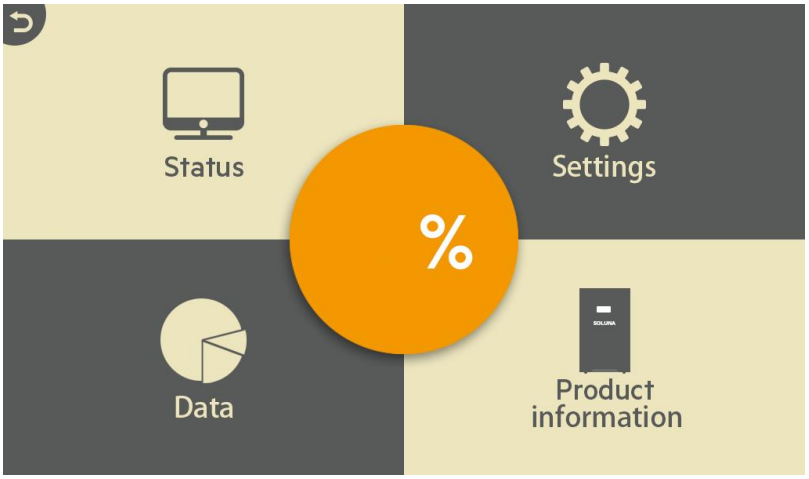


Figure 4.3 LCD Screen

4.2.3 How to check the information of “Status” icon

User can find the following interface after clicking the icon of Status

Figure 4.4 information of status icon

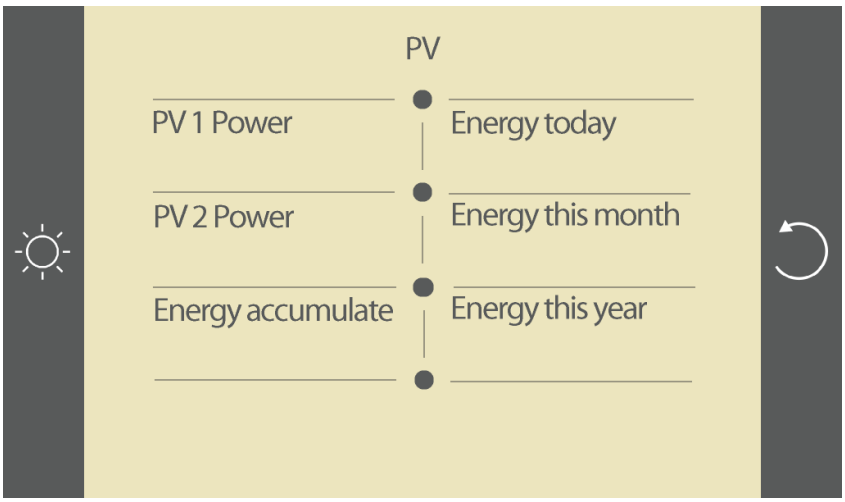


Figure 4.5 PV information

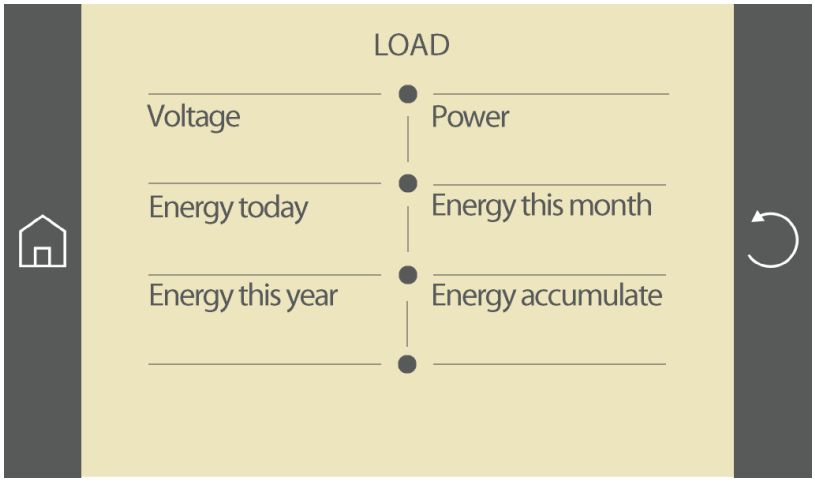


Figure 4.6 Load information

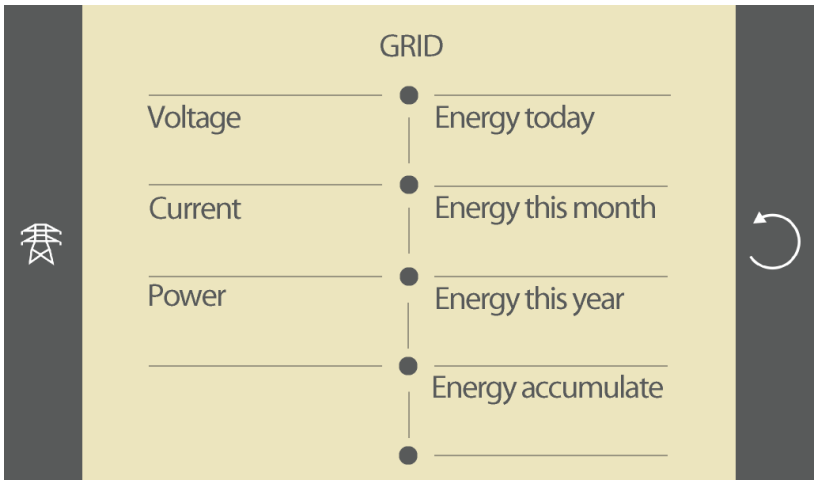


Figure 4.7 Grid information

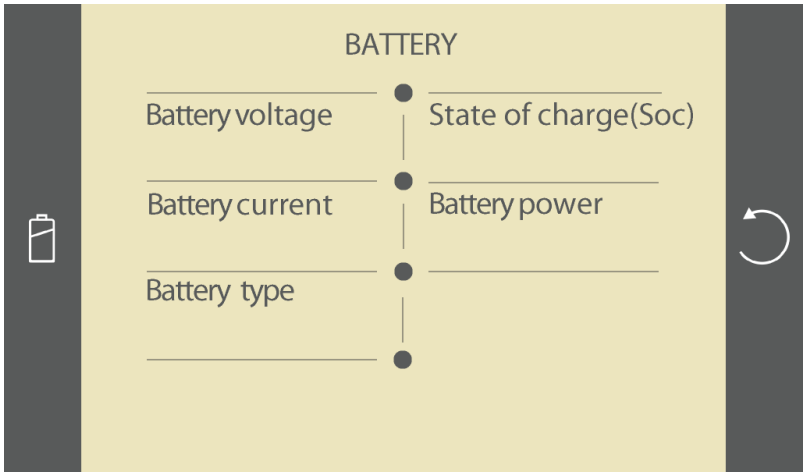


Figure 4.8 Battery information

4.2.4 How to Setting parameters of Soluna system

User can find the following interface after clicking the icon of “Setting” .

Figure 4.9 Setting iron information

User can find the following interface after clicking the icon of Power sources.

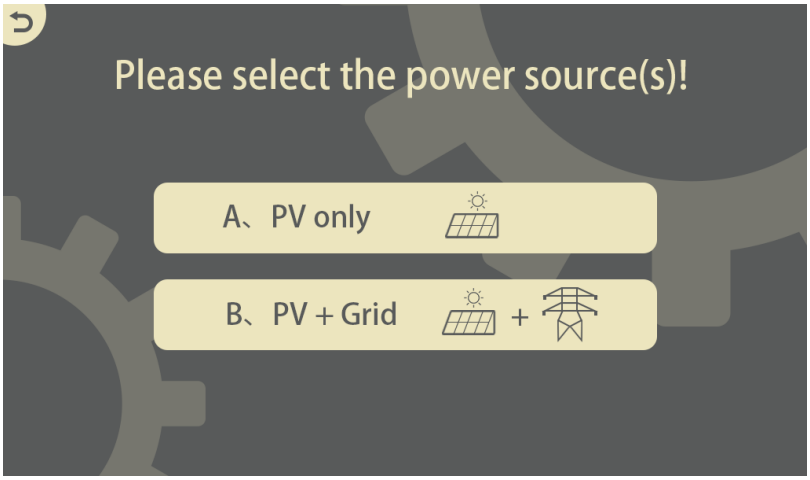


Figure 4.10 Power source

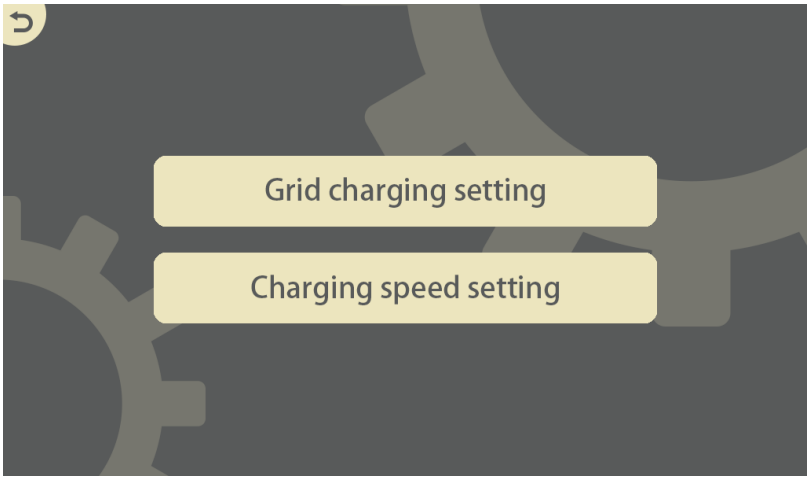


Figure 4.11 Charging setting (1)

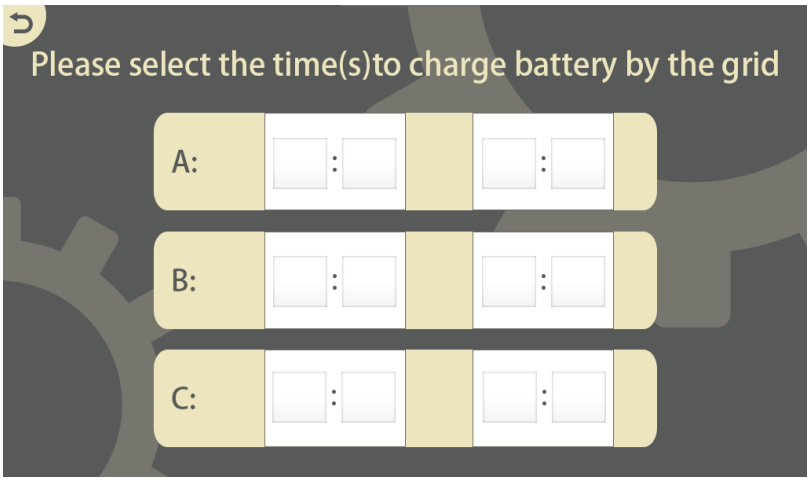


Figure 4.12 Charging setting (2)

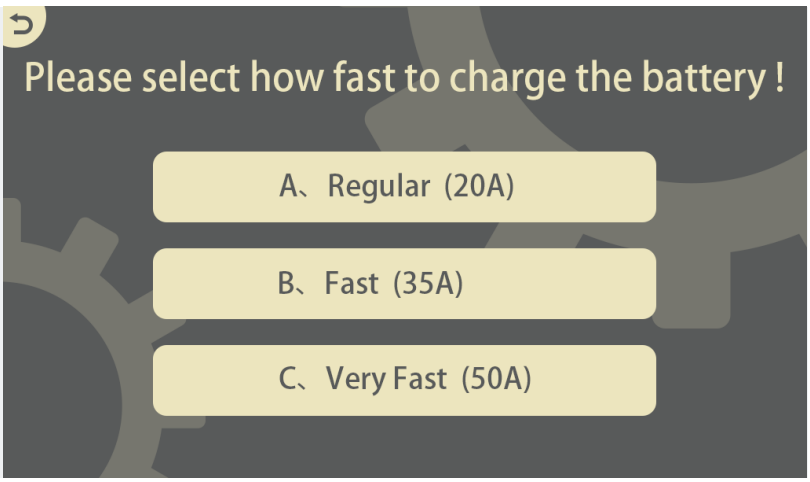


Figure 4.13 Charging setting (3)

User can find the following interface after clicking the icon of power utilizations

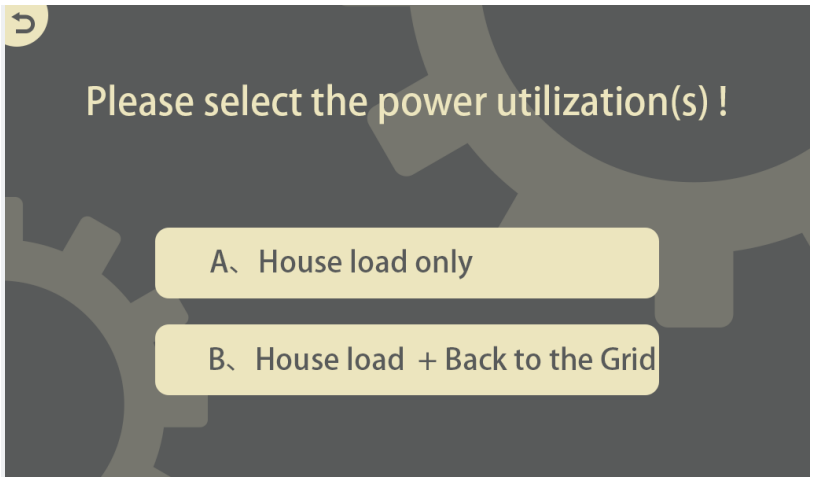


Figure 4.14 Discharging setting (1)

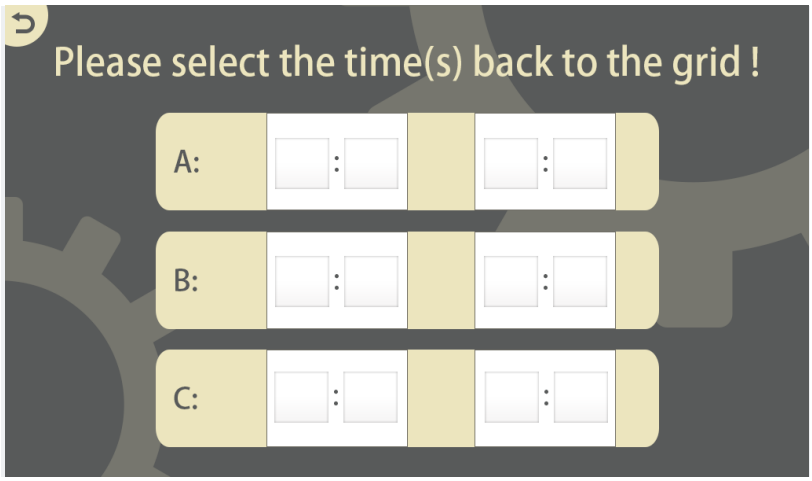


Figure 4.15 Discharging setting (2)

User can find the following interface after clicking the icon of Languages

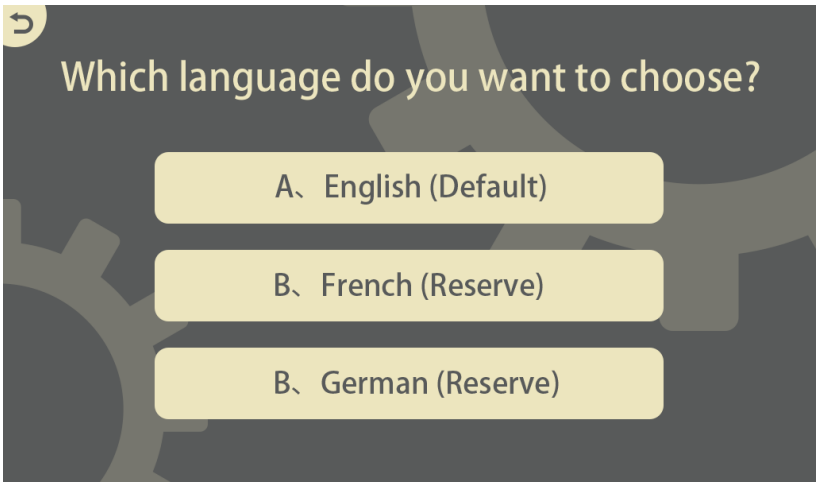


Figure 4.16 Language selection

Remark: There are 3 kinds of language option in the Soluna system
But ,So far, only English is default, French and German are reserve.

User can find the following interface after clicking the icon of timing

Figure 4.17 Timing setting

User can find the following interface after clicking the icon of Reset & advanced Setting. User need to enter password if the user wants to restore the parameters of Soluna system.
(Remark: Soluna will provide the password if user needs it)

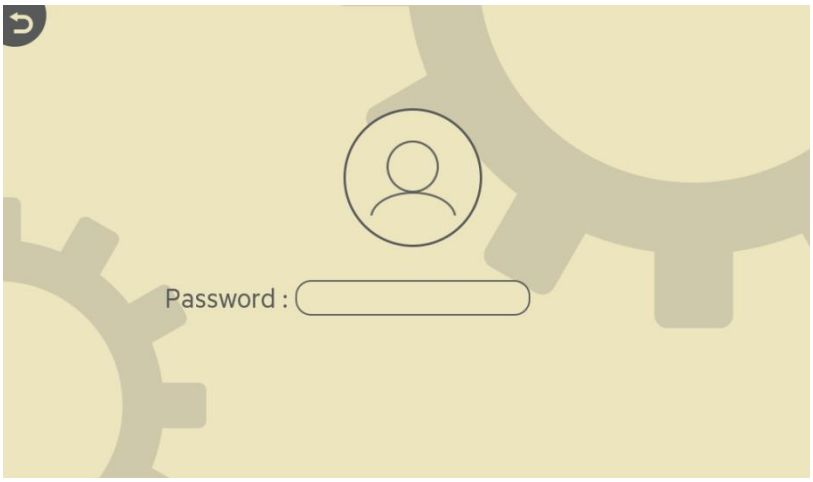


Figure 4.18 Password enter

User needs to confirm again it after setting the parameters of Soluna system.

Figure 4.19 Confirm

4.2.4 How to check the information of “Data” icon.

User can find the following interface after clicking the icon of Data

Figure 4.20 Data icon

a. User can find the following interface after clicking the icon of Solar generation

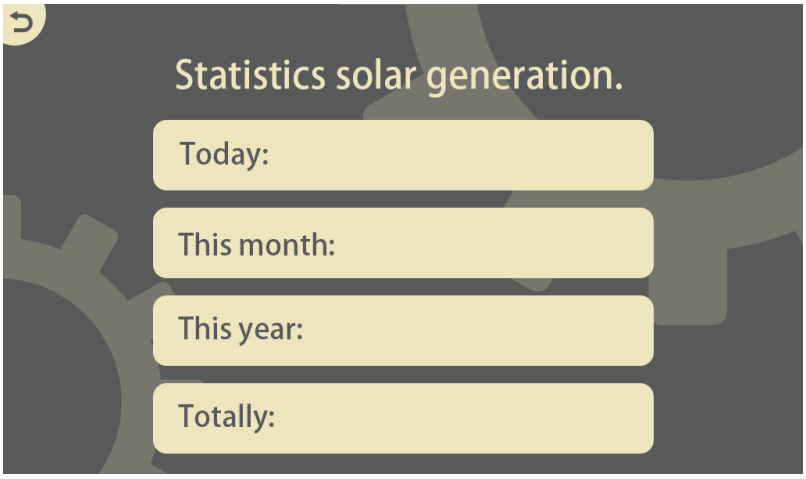


Figure 4.21 Statistics solar generation

b. User can find the following interface after clicking the icon of “back to grid”

Figure 4.22 Statistics of selling back to the grid

C. User can find the following interface after clicking the icon of “Equivalent tree Planting”.

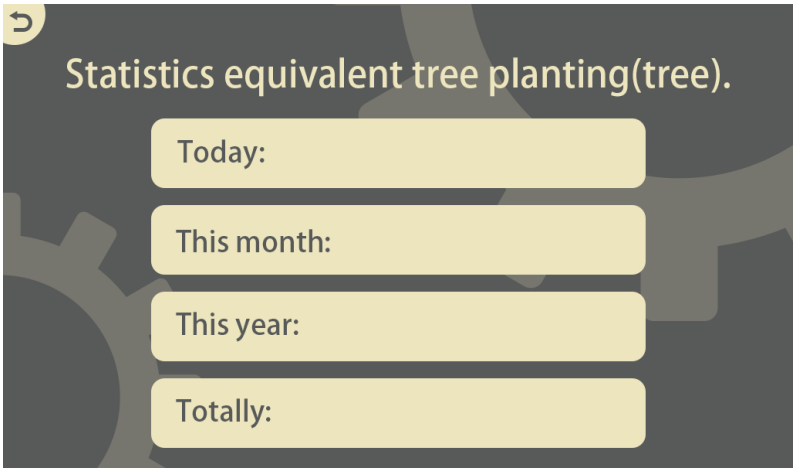


Figure 4.23 Equivalent tree planting

d. User can find the following interface after clicking the icon of “save the earth”.

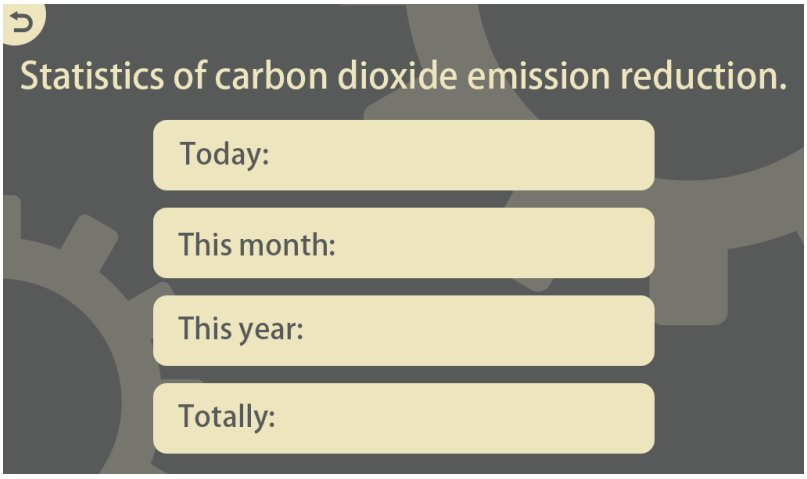


Figure 4.24 Carbon dioxide emission reduction

4.2.5 How to check the production information of Soluna system

User can find the fault information after click the icon of “production information”.

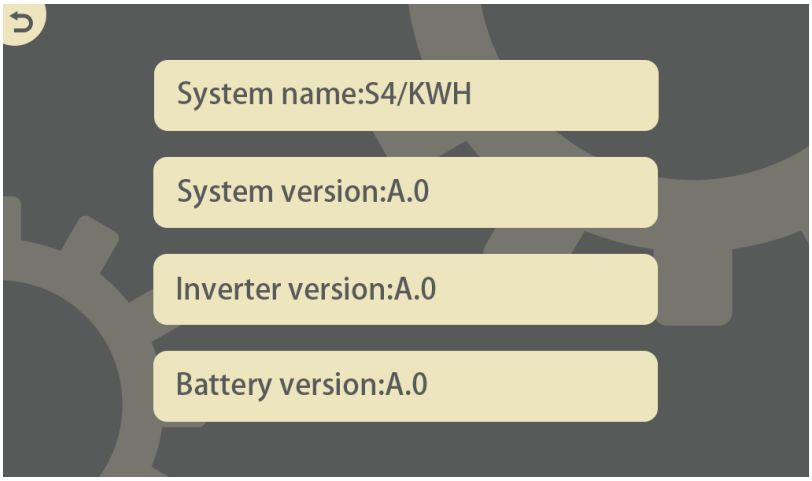


Figure 4.25 Production information

4.2.6 How to Check the fault information

User can find the fault information after click the fault icon

Remark: User will find an icon blinking in the upper right corner of the LCD panel if there is any fault during Soluna system operation

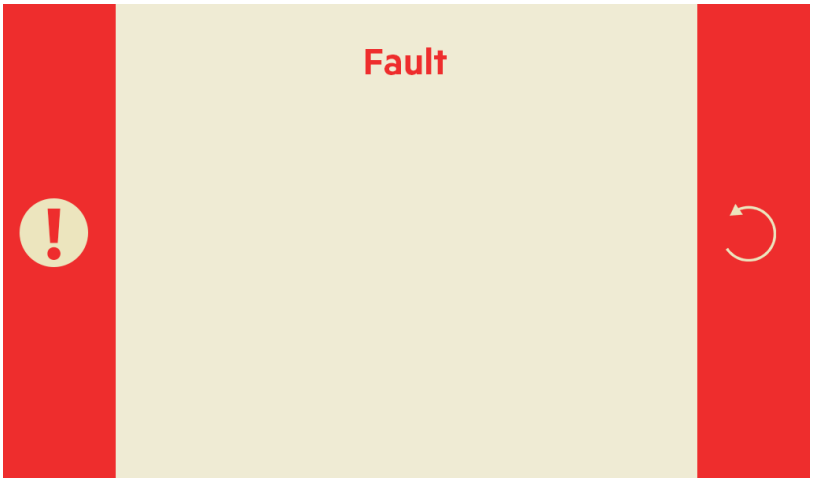


Figure 4.26 Fault information

5 How to maintain

5.1 Fan maintenance

ESS fan' expected life-span is 70000 hours under continuous working. The higher ambient temperature is, the shorter life of service of the fan. Check the fan regularly in every year to see the fan is working well or not, make sure there is air blowing out from the outlet of the system.

Note: Shut down the fan before maintenance, so as to avoid personal injury and device damage caused by electric shock and fan blades rotation at high speed.

5.2 Clearance

Regularly clear the whole system, especially ventilation hole, ensure air free flow in the housing, use vacuum cleaner if necessary, make sure no dust and other sundries hindering the ventilation of the system.

Note: Shut down the fan before cleaning, so as to avoid personal injury and device damage caused by electric shock and fan blades rotation at high speed.

5.3 Fault handling

If Soluna system has any failure information shown in the table below, and it has not been eliminated after restart, Please contact us or local distributor.

Item	Fault information
1	Dc input polarity reverse fault
2	Dc insulation impedance permanent fault
3	Dc leakage current fault
4	Ground fault GFID (battery end grounding)
5	Read the memory error
6	Write the memory error
7	GFDI Blown Fuse
8	GFDI Grounding contact failure
9	IGBT damage by excessive drop voltage
10	Auxiliary switch power supply failure
11	Ac main contactor errors
12	Ac auxiliary contactor errors
13	Grid voltage surge
14	DC firmware over current malfunction
15	AC firmware over current malfunction
16	GFCI(RCD) Ac leakage current fault
17	Three phase current, over-current fault
18	AC over current fault of hardware
19	All hardware failure synthesis
20	DC over current fault of the hardware
21	Dc leakage flow fault
22	Crash stop (if there is a stop button)
23	Ac leakage current is transient over current

24	Dc insulation impedance failure
25	Dc reverse irrigation failure
26	The dc bus is unbalanced
27	Dc end insulation error
28	Inverter 1 dc high fault
29	Ac load switch failure
30	Ac main contactor failure
31	Ac secondary contactor failure
32	Inverter 2 dc high fault
33	AC Current over current
34	AC Overload
35	AC Grid Unavailable fault
36	AC grid phase error
37	Ac three-phase voltage imbalance failure
38	Ac three phase current unbalanced failure
39	AC Over current failure
40	DC Over current failure
41	AC Line W,U over voltage
42	AC Line W,U low voltage
43	AC Line W,V over voltage
44	AC Line W,V low voltage
45	AC Line U,V over voltage
46	AC Line U,V low voltage
47	AC Over frequency
48	AC Low frequency
49	Phase U grid current dc current high
50	Phase V grid current dc current high
51	Phase W grid current dc current high
52	AC inductor A,phase current dc current high
53	AC inductor B,phase current dc current high
54	AC inductor C,phase current dc current high
55	dc bus voltage is too high
56	dc bus voltage is too Low
57	AC reverse irrigation
58	AC grid U over current
59	AC grid V over current
60	AC grid W over current
61	Reactor A phase current high
62	Reactor B phase current high
63	Reactor C phase current high
64	IGBT Heat sink High temperature

6.How to use the generator & AC couple function

Soluna system have the function of diesel generator & AC couple.
If the user who want use the diesel generator & AC function, please contact to us, following the engineers' instruction to operate.

7 Contact us

If any questions for Soluna system, please contact us.

SOLUNA
Add: No.3492 Jinqian Road, Shanghai, China 201406
Tel: +86-21-57475835
Email: sales@solunabattery.com
Web: www.solunabattery.com