



User Manual

■ SLS



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1. Important Safety Information

1.1 Read this First

This manual includes important instructions for installing and maintaining the Solenso Data Transfer Unit (SLS).

1.2 Safety Instructions

Symbol	Usage
	Indicate a hazardous situation that can result in deadly electric shock hazards, other serious physical injuries, or fire hazards.
	Indicate directions that must be fully understood and followed entirely to avoid potential safety hazards including equipment damage or personal injury.
	Indicate that the described operation must not be carried out. The reader should stop, use caution, and fully understand the operations explained before proceeding.

- Note that only professionals can install or replace SLS.
- Do not try to repair SLS without Solenso' approval. If SLS is damaged, please send the SLS back to your installer for repairing/replacing. Disassembling SLS without Solenso' approval will invalidate remaining of the warranty period.
- Please read all instructions and warnings on the technical specifications carefully.
- Do not use Solenso products in a way that is not suggested by manufacture. Doing so may cause death or injury to persons or damage to equipment.

1.3 User

This manual is only for professional installation and maintenance personnel to use.

1.4 Support and Contact Information

If you have technical queries concerning our products, please contact your system's installer or distributor. If further support is required, please contact Solenso' support at this link.

- www.solenso-global.com
- Solenso' customer service center: info@solenso-global.com
info.eu@solenso-global.com

1.5 Other Information

Product information is subject to change without notice. The user manual will be updated frequently; please refer to Solenso official website at www.solenso-global.com for the latest version.

2. Solenso Microinverter System

2.1 Microinverter

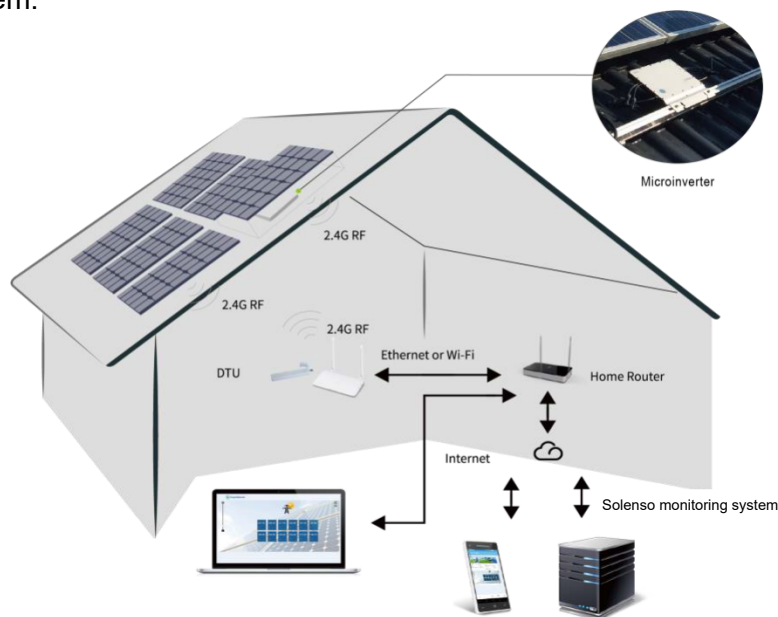
It converts the DC output of PV modules into grid-compliant AC power. It sends the output information of PV modules and the operation data of the microinverters to the SLS, which is the hardware basis of the module-level monitoring. With conversion efficiency up to 96.7% and MPPT efficiency up to 99.9%, Solenso microinverters rank into the first class of the world's microinverter industry.

2.2 SLS

The SLS is the key component in Solenso microinverter system. It works as the communication gateway, which operates between the Solenso microinverters and the Solenso Monitoring Server. The SLS communicates with the microinverter wirelessly via 2.4GHz Proprietary RF (Nordic), collecting the operation data of the system. Meanwhile, the SLS connects to the Internet via router and communicates with Solenso Monitoring Server. The microinverter system operation data will be uploaded to Solenso Monitoring Server via SLS.

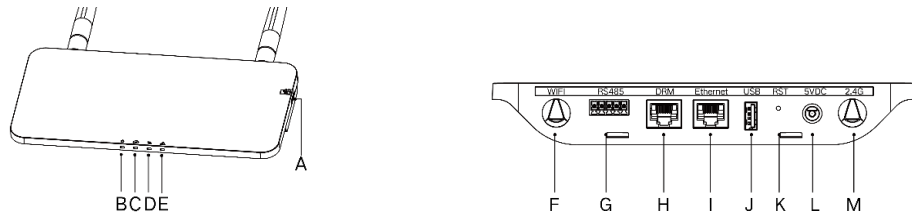
2.3 Solenso Monitoring Server

It collects the operation data and status of the microinverters in the system and provides the module-level monitoring for the users and maintenance staff. The following diagram shows the Solenso Microinverter system.



3. Interface Layout

3.1 DTU-SLS



Item	Description
A	SD Card Slot
B	SLS Power Indicator
C	SLS Communication Indicator (With Server)
D	SLS Communication Indicator (With MI)
E	SLS Alarm Indicator
F	WiFi Antenna (2.4G)
G	RS485
H	DRM Port (For Australia only)
I	Ethernet Port
J	USB Port
K	Reset Bottom
L	Power Port
M	2.4G Antenna

3.2 Export Management Function (RS485 port)

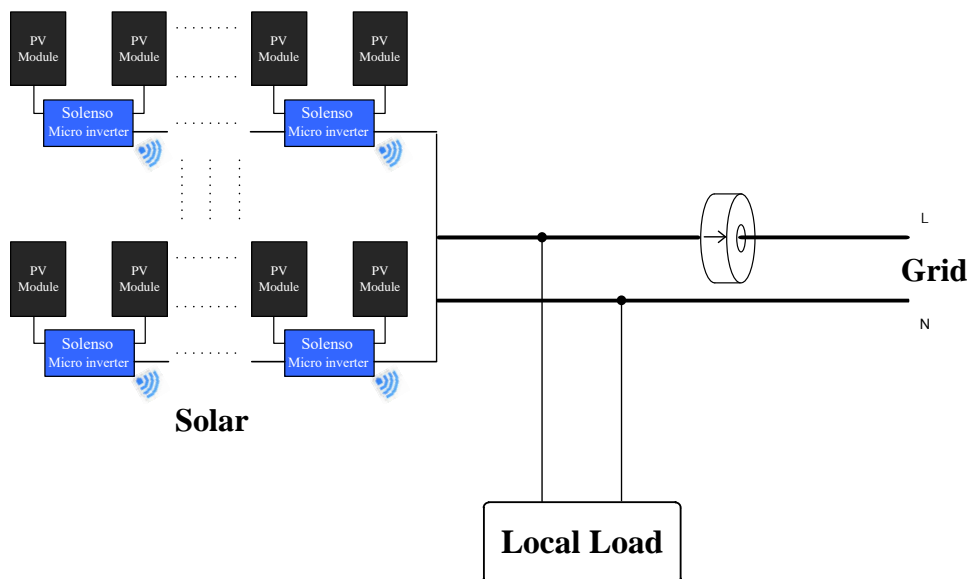
a. Device Required.

- Solenso Microinverter: 4 in 1 Unit, 2 in 1 Unit and Single Unit
- SLS: Solenso DTU-SLS
- Meter: Chint Meter (DDSU666)/Chint Meter (DTSU666)

b. Export Control Type.

- Type 1: Zero Export: to limit the exporting power to zero so that can prevent the generated power feed back to the grid.
- Type 2: Export Limit: to limit the exporting power within a certain value.
- Type 3: Production and Consumption Monitoring: enable to measure the PV generating under a high accuracy.

c. Installation Diagram.



Note: Please refer to “Solenso DTU-SLS Smart meter configuration” for more details.

3.3 Remote active power control (RS485 port)

In some countries, it might require that the generating plants should be equipped with a logic interface (input port) in order to cease output active power or limit active power to a regulating level. This logic input can be RS485 port, Ethernet port, etc. SLS provide RTU Modbus protocol over RS485 port for this remote active power control. For more information, please refer to “Modbus implementation Technical Note”.

3.4 DRM Port

DRM port is provided to support several demand response modes as below by connecting external control device with a standard RJ-45 connector. For SLS, it can support DRM0/5/6/7/8 if used with Solenso microinverters.

Mode	Requirement
DRM0	Operate the disconnection device
DRM1	Do not consume power
DRM2	Do not consume at more than 50% of rated power
DRM3	Do not consume at more than 75% of rated power AND Source reactive power if capable
DRM4	Increase power consumption (subject to constraints from other active DRMs)
DRM5	Do not generate power
DRM6	Do not generate at more than 50% of rated power
DRM7	Do not generate at more than 75% of rated power AND Sink reactive power if capable
DRM8	Increase power generation (subject to constraints from other active DRMs)

3.5 Local Install Assistant

Local Install Assistant is a new function integrated with SLS, please download the Installer App (for installer/distributor use only) first.



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SLS has improved from the previous generation of SLS product, and developed with this new function that allows installer:

- a. One step to complete the WiFi configuration;
- b. Station overall Inverters status indication allows the installer to see how many MI under this SLS is working properly (and the details for each MI) and how many is abnormal (and the details for each MI) with one glance of eyes;
- c. Add the Connection status, which will display the signal strength between each MI with connected SLS, so that installer can adjust the SLS installation location accordingly. This function will simplify the SLS installation, and avoid the second visit for installer due to the poor connection between SLS and certain MI.

Note: Please refer to “Solenso Local Install Assistant Technical Note” for more details.

4. SLS Installation

4.1 System Capacity

The SLS is capable of monitoring up to 99 panels. If the communication between the SLS and microinverter caused by the installation conditions, the number of PV modules that the SLS can monitor may be reduced.

Note: Max. monitoring quantity is for open space, installation condition meets the requirement from both SLS and Microinverter manual, and the distance between Microinverter and SLS needs to be within the required range.

4.2 Basic Conditions Required

Before installing the SLS, ensure that the site meets the following requirements:

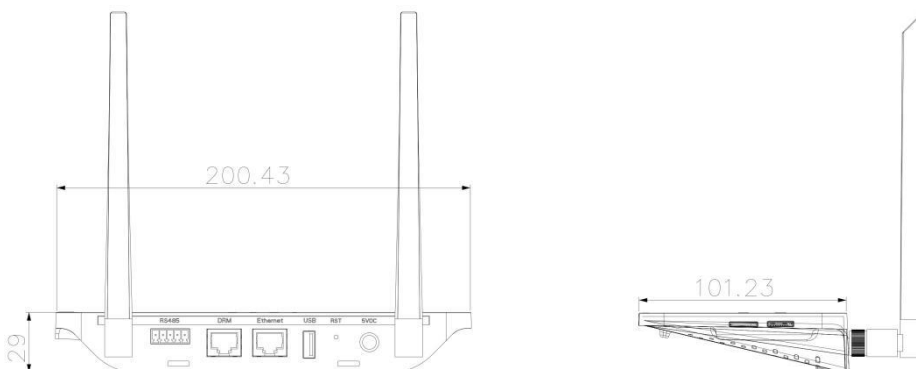
- Standard 220 VAC power outlet.
- Stable broadband internet connection.
- Router with Ethernet port.

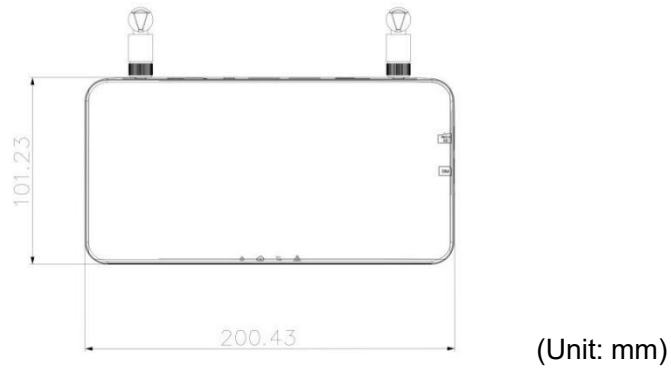
The environmental requirements for SLS installation:

- Away from dust, liquid, acidic, or corrosive gas.
- The temperature should be between -20°C and 55°C.

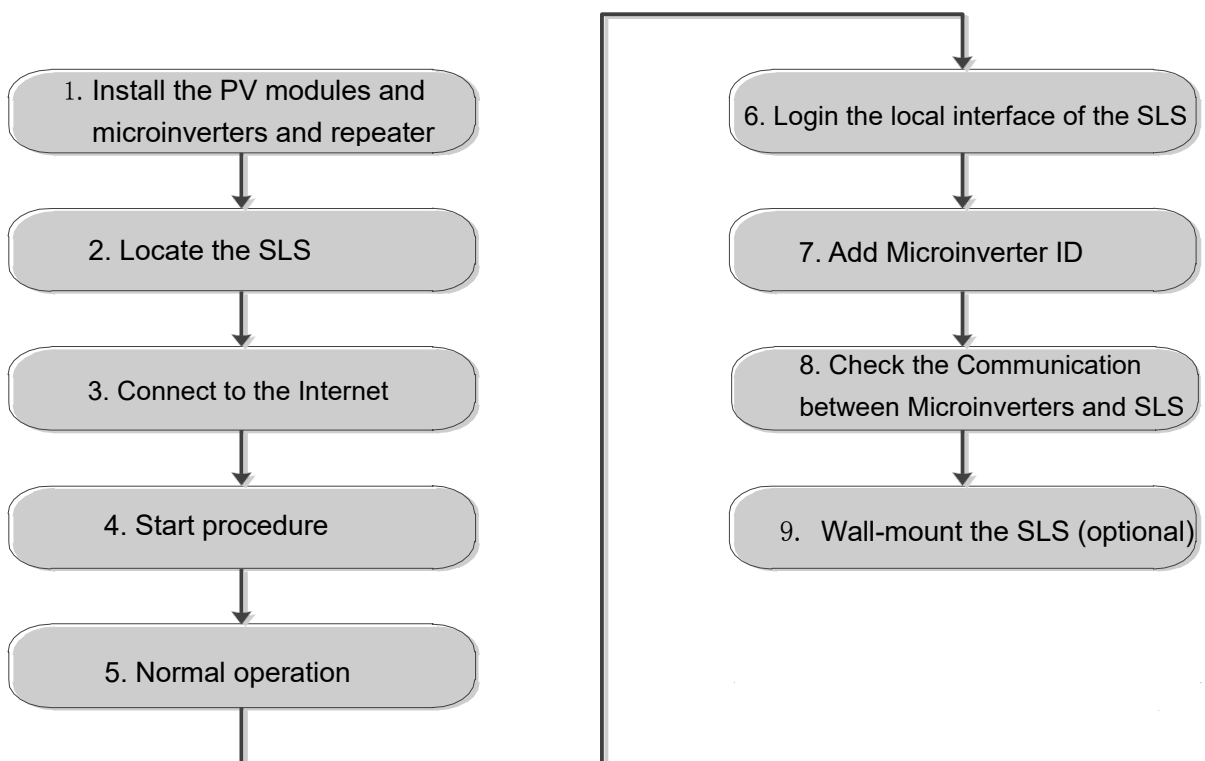
If you plan to install the SLS on the wall, please prepared two #8 (4.166mm diameter) screws and a screwdriver in advance.

4.3 Dimensions





4.4 System Installation Sequence



4.5 Preparation

a. Download the Solenso "SofiaPV pro" installer App



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b. Check the box for following items:

- Solenso SLS
- Two Antennas
- Adapter
- Bracket
- 5 Pin Plug

c. Choose the way SLS connect to the Internet:

● **DTU-SLS :**

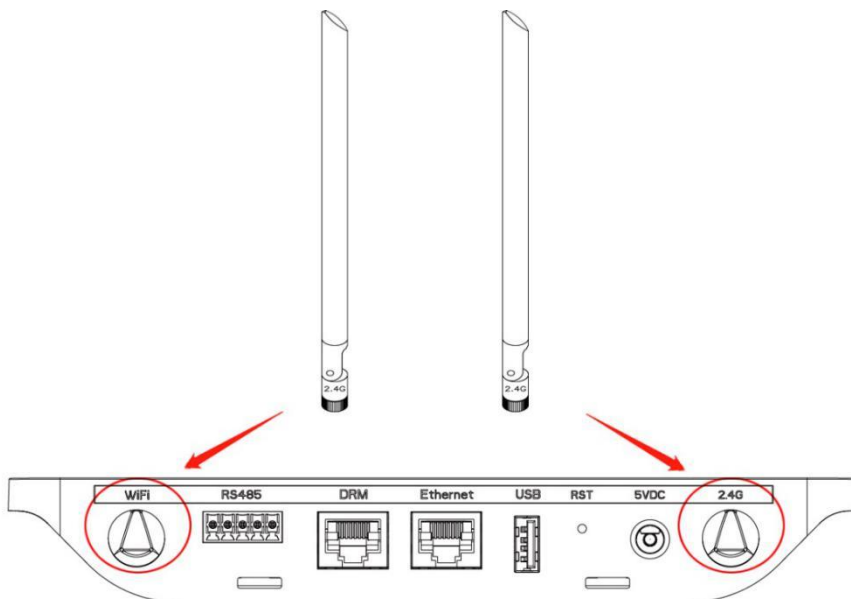
Use WiFi or Ethernet. Please prepare for the following items, if needed:

- Ethernet Cable (if choose Ethernet option).
- Solenso Installer App.

4.6 Install the SLS

Step 1: Install the antennas

Take two 2.4G antennas out from the box, screw the antenna into the WiFi port and 2.4G port.



Note: If the SLS installation location is inside the metal box or under the metal / concrete roof, extended 2.4G cable or 2.4G sucker antenna will be suggested, which can be purchased from Solenso or local electrical store (Please contact Solenso's Tech. support team for the detail type of the cable or antenna at info@solenso-global.com/ info.eu@solenso-global.com).

Step 2: Choose an Installation Location

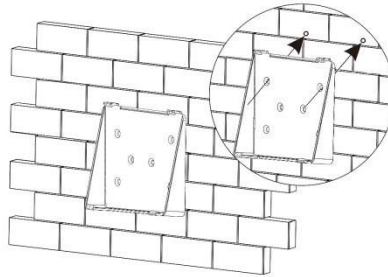
- Installed on the top floor to increase the signal strength.
- Installed near the center of the PV array.
- Installed at least 0.5m above the ground and more than 0.8m away from the corner.

Note: Please do not install the SLS direct above the metal or concrete to prevent the signal dilution.

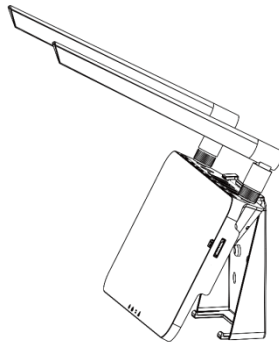
Step 3: Choose the Installation Method

Option 1: Mount the SLS on the wall.

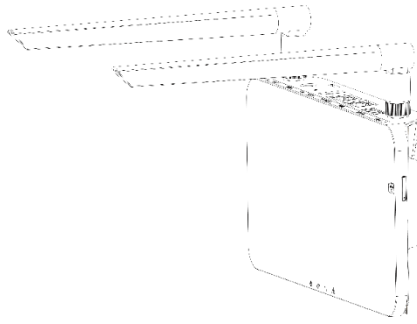
- Screw the bracket on the wall, please choose at least two screw holes (one from each side) to fix the bracket (the M4 screws need to prepare by installer);



- Match the bracket's upper buckle with SLS;

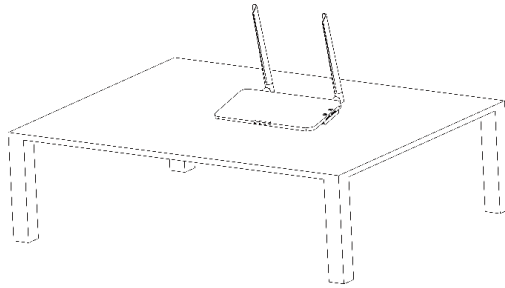


- Match the bracket's lower buckle by gently press the lower side of the SLS until hear the Click. Please make sure the antennas are vertical to the wall.



Option 2: Place the SLS on the table

- Place the SLS on the table, please make sure the antennas are vertical to the table;

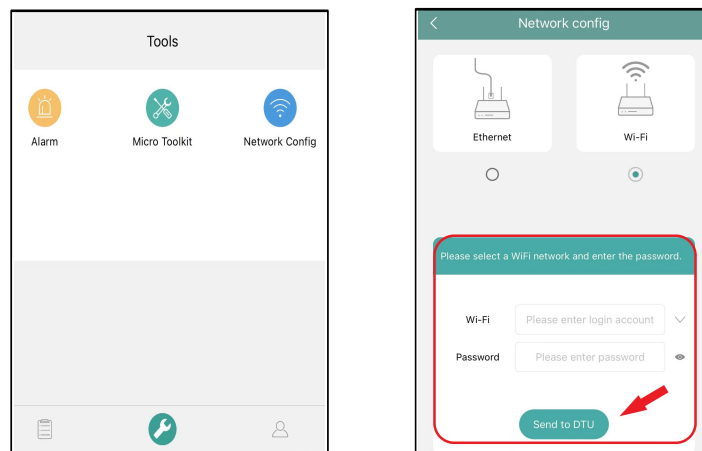


- a. Plug in the power adapter to power the SLS;
- b. Set up with Internet.

● **Network Configuration:**

Option 1: Wi-Fi

- a. Open our application "SofiaPV Pro" from your smart phone (make sure your smart phone is allowing a 4G/5G connection or Wi-Fi)
- b. Browse your Wi-Fi network and connect your smart phone under DTUP Wi-Fi.
- c. Go back to "SofiaPV Pro" and click the “🔧” on the bottom of page, then click “Network config 📶” to set your private Wi-Fi info (network name and password) and click on “Send to DTU” to complete the Wi-Fi configuration.

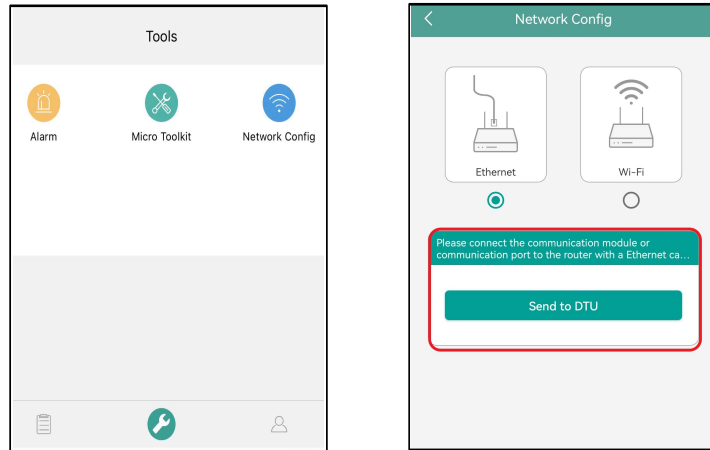


- d. Please restart SLS by unplugging it then connecting it back to power grid to confirm your network setting. After 3 minutes maximum, your system will be online.

Note: If the device fails to configure network or other unexplained malfunction, use the pin to insert into the "RST" hole and keep for 6-10 seconds. The SLS will automatically return to Starting up state, then repeat the above a. b. c. d. steps.

Option 2: Ethernet

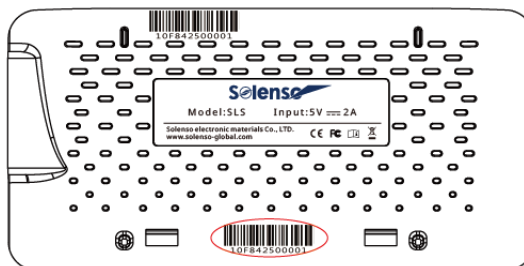
- Use the Lan Cable, one side connect to house router, another side connect to SLS Ethernet port.
- Use the smart phone open the "SofiaPV Pro" and login. Click “🔧” on the bottom of the page and then click “Network Config 📶”, select “Ethernet”.
- Final click on “Send to DTU” to complete the network configuration.



5. Complete Installation Map

Please complete the installation map.

- Peel the serial number label (as circled below) from the SLS and place it on the installation map.



- Complete system information of the installation map shown as follows.

To sheet _____														
Panel Group: Address: Title: Sheet _____ of _____	Customer Information:							DTU Serial Number:			Solenso			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A														
B														
C														
D														

To sheet _____ 4964022 10/11

6. Site Creation on Solenso monitoring platform

- A. Install Solenso Installer APP by searching “SofiaPV pro” at the App Store (IOS) or Play Store (Android).
- B. Open the APP and login in with your installer account name and password. If you are a new installer with Solenso, please apply an installer account from your distributor or Solenso Technical Support Team at info@solenso-global.com / info.eu@solenso-global.com in advance.
- C. Add Station, select the “Station” tab on the bottom, then select “⊕” on the right top side of the page.
- D. Please fill in the station details accordingly, and press “Next” after completed.
- E. Add owner, fill in the new owner name or choose an existing owner and press “Next”.
- F. Press “Add SLS”, scan the SLS ID and MI ID (or you can manually input MI ID) in turn and press “Next”.
- G. Design the Layout base on the installation. Layout is horizontal by default, you can click the tick box on the top of the right-hand side and select another layout or manual layout, and then select “Next” after completing the design.
- H. Add array, fill in array name, orient and inclination, and press “Save”.
- I. Upload a picture of the site and press “Next”.
- J. Advanced setting, select currency unit and enter unit electricity price and select “Finished” to complete the site creation.
- K. The new site will appear on the Station list from the Installer account.
- L. Please click the “Networking” button after the plant is created.
- M. Please wait about 30 minutes, the plant will show online, and all the MI-IDs are found.

Note: For more setting details regarding the Export Control, Local installation assistance please acquire the related Operation Guide from our Tech. Support Team at info@solenso-global.com / info.eu@solenso-global.com or find more details on our website www.solenso-global.com.

7. End-user Login

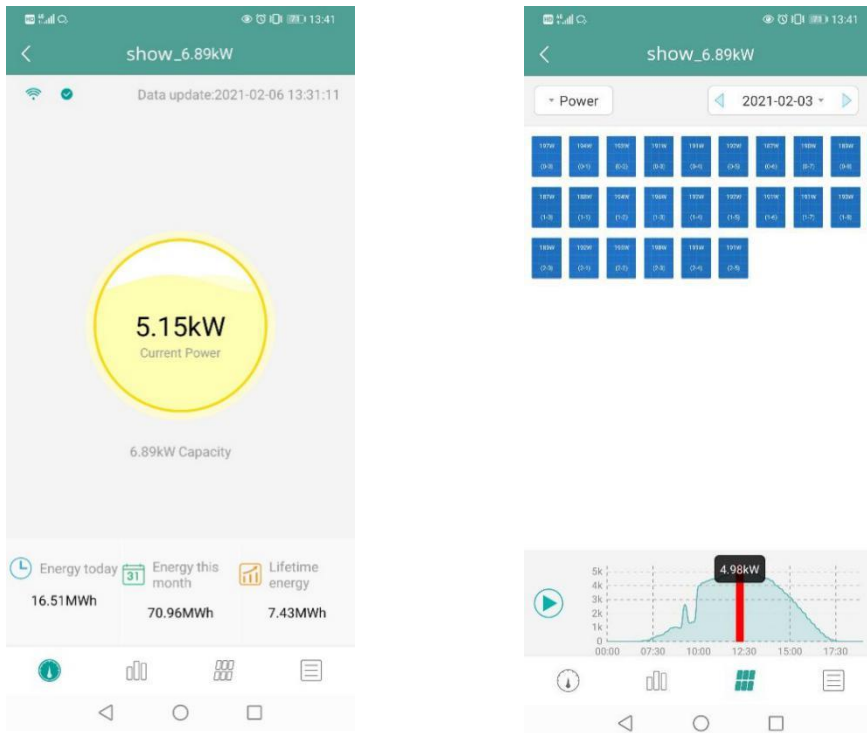
- a. Please download the Solenso End User App. You can search “SofiaPV” at the App Store (IOS) or Play Store (Android).
- b. Log in with the Password and Username that has been set up by Installer on the previous step (Section 6 step e), and press “Login”.
- c. Customers will able to view all details once the data start to upload, normally it will need around 30 mins for the first data coming through.
- d. Customer can also view the Microinverter generating details via accessing the Solenso monitoring platform website at <https://monitor.solenso.net>.

8. View the Website platform

Open a browser, enter <https://monitor.solenso.net> . Login to your account, view the station information.

9. View the mobile Application

Download mobile APP by searching “SofiaPV”/“SofiaPV pro” at App Store (IOS) or Play Store (Android), log in with customer/installer login account and password, all installed Microinverters operating details will be able to view from there.



10. LED Indicators

The system status can be viewed by Solenso local APP or LED indicators.

LED mark	LED Color	Explanation
		SLS power on or power off
		Network communication
		Microinverter communication
		Fault State

LED States

LED Indicator	Status	Description
All		Firmware upgrading
		Starting up
⏻		SLS power on
		SLS power off
☁		SLS are communicating with Solenso Monitoring Server
		Internet disconnected
		Internet connected, Server disconnected
		Local APP connected
↕		Microinverters are communicating
		MI IDs Incomplete
		No MI ID (Please perform Networking)
⚠		Normal
		SLS alarm occurred
		Microinverter alarm occurred
		Meter alarm occurred

11. Technical Data

Model	DTU-SLS
Type	2.4GHz Proprietary RF (Nordic)
Maximum distance (open space)	200m
Monitoring data limit from solar panels	99 ²
Communication to Cloud	
Type	WIFI(802.11b/g/n) ¹ /Ethernet
Sample rate	Per 15 minutes
Communication to Meter	
Signal	RS485
Maximum distance (RS485 cable)	500m
Display	
LED	LED Indicator * 4 – RUN, Cloud, MI, ALM
APP	Local APP

Power Supply	
Type	External plug-in adapter
Adapter input voltage/frequency	100 to 240 V AC / 50 or 60Hz
Adapter output voltage/current	5V / 2A
Power consumption	2.5W (typical), 5W (maximum)
Mechanical Data	
Ambient temperature (°C)	-20°C to 55°C
Dimensions (W×H×D)	200mm×101mm×29mm
Weight	0.20 kg
Mounting system	Wall mounting / Desktop mounting
Features	
Compliance	FCC 15B, FCC 15C, EN60950-1, EN61000-3-2, EN61000-3-3, EN301489, EN300328, EN300440, RCM
*1 If the SLS installation location is inside the metal box or under the metal/concrete roof, extended antenna will be suggested.	
*2 Depending on the installation environment, please refer to user manual for more details.	