

Installation Instruction for Smart Anti-injection Box

Model: SAR-100

I . Introduction

SOLARMAN Anti-injection box enables the real-time monitoring of grid-tied situation through the integration of three-phase meter, logger and CT, which meets the requirement of real-time adjusting inverter output power at power consumption scenario.

Supported data transmission mode: WiFi&Ethernet.

II . Parameters

Product Name: Smart Anti-injection Box

Product Model:SAR-100

Parameter	
Remote Communication	2.4G WiFi+Ethernet
Local Communication	RS 485
No. of Connections	10
Accessing Method	Three-Phase Four-Wire
Working Voltage	3x230/400V 50/60Hz
Working Current	3x1.5(6)A
CT (Regular)	250/5A, 600/5A, 800/5A, 1000/5A, 1500/5A, 2000/5A
IP Grade	IP65
Working Temperature	-30°C~+70°C
Working Humidity	5%-95% (No Condensation)
Installation Method	Wall-Hanging

Status of indicator light after normal networking

After DIN-Rail Logger(WiFi/ETH) is connected, check the status of STATUS light, LINK light and 485/422 light and if there is data on the platform.

(There is only one light for each STATUS light, LINK light and 485/422 light.)

The normal operation status after DIN-Rail logger is powered

- LINK light keeps ON (WiFi connected to server)
- LINK light flashes (Ethernet connected to server)
- STATUS light keeps ON [DIN-Rail Logger(WiFi/ETH) runs normally]
- 485/422 light keeps ON/fast flash [DIN-Rail Logger(WiFi/ETH) connected to inverter and COM has return value]

Light	Implication	Instruction
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485/422	Communication status with inverter	1.ON/Fast Flash: DIN-Rail Logger (WiFi/ETH) has connected to inverter and communicated normally. 2.OFF: DIN-Rail Logger (WiFi/ETH) fails to connect to inverter or no communication returns.
LINK	Communication status with router	1.OFF: Fail to connect to router. 2.ON 1s/OFF 1s (Slow Flash) : Successful connection to server via Ethernet. 3.ON: Successful connection to server via WiFi.
STATUS	Logger running status	1.OFF: DIN-Rail Logger (WiFi/ETH) runs abnormally. 2.ON: DIN-Rail Logger (WiFi/ETH) runs well. 3.ON after 5s: DIN-Rail Logger (WiFi/ETH) is starting or rebooting.

III. Product Installation Notes

1. Tools

Tool	Usage
Wire stripper	Strip cable insulation
Cross screwdriver	Use to connect
Twisted pair	Connect to RS485
Cable	Connection between logger and router

2. Location

The installation location must meet the following requirements.

2.1 The logger should be installed in doors, avoiding damp and dust environment. Direct sunlight and aggressive vapour should also be avoided.

2.2 Environment temperature: $-25^{\circ}\text{C} \sim +60^{\circ}\text{C}$.

2.3 Max. communication distance for RS485 should be less than 200m.

Away from other wiring routes or pipes in doors, such as gas pipe, water pipe, electric wire and etc.

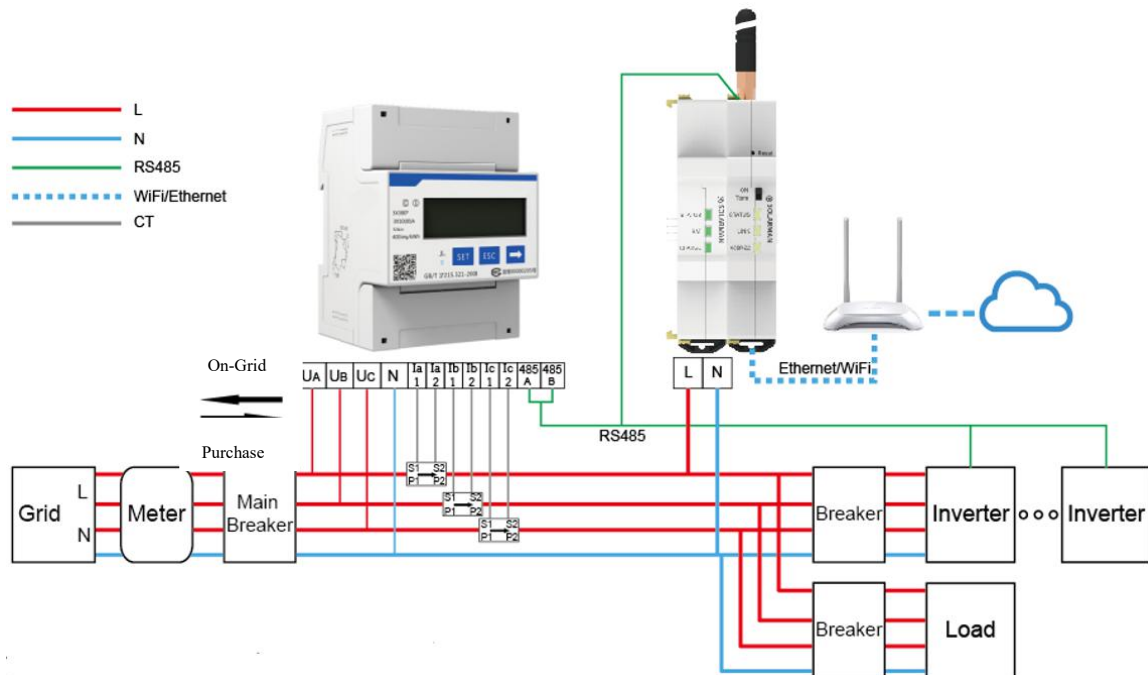
2.4 Away from metal structure to ensure wireless signal strength.

3. Notice

3.1 Power off the device before installation.

3.2 Double check the connection before power on the device.

IV. Anti-injection System Diagram



Notice:

1.If Ethernet is used as communication method on site, please refer to 7.3 for more details.

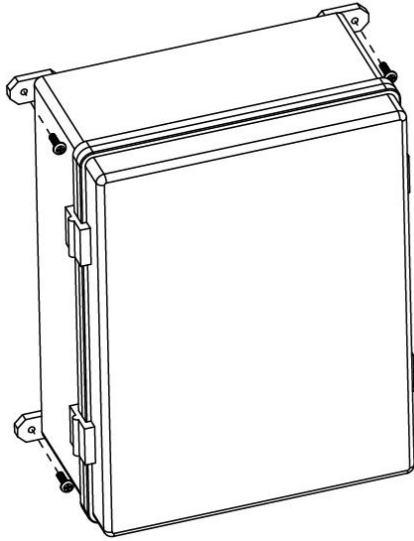
V. Device Installation

5.1 Power off the system.

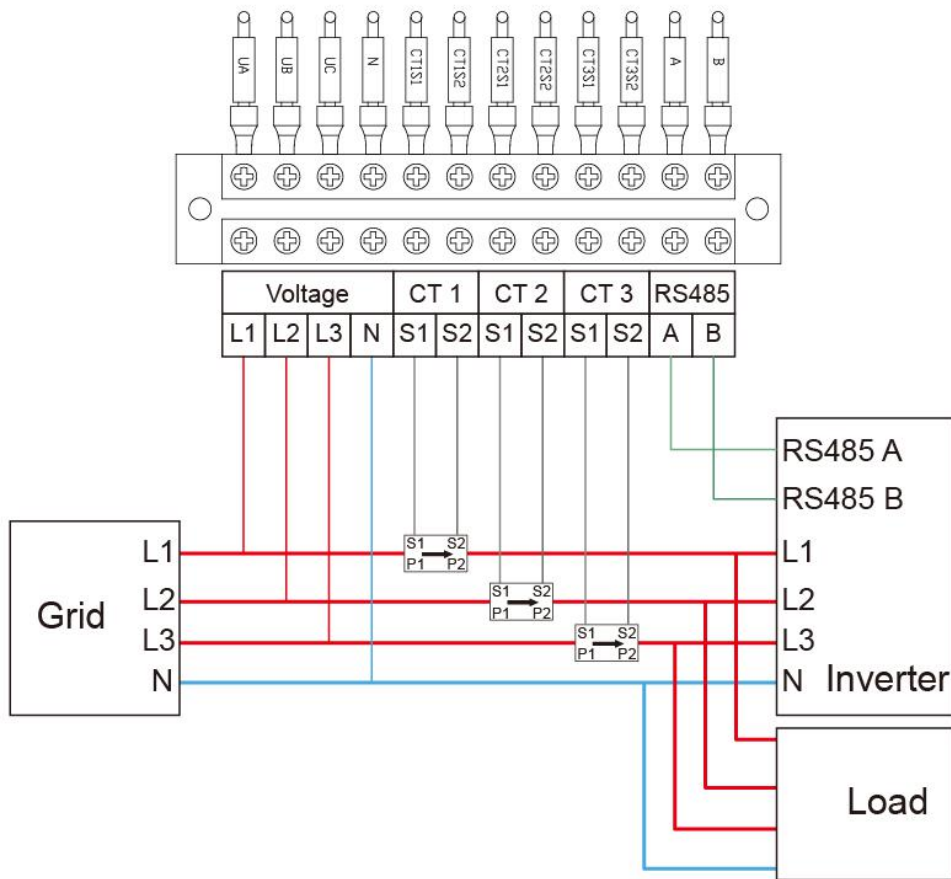
Please power off the system before device installation.

5.2 Make the device fixed

Please select a right place to make the device fixed.



5.3 Wiring of Smart Anti-injection Box

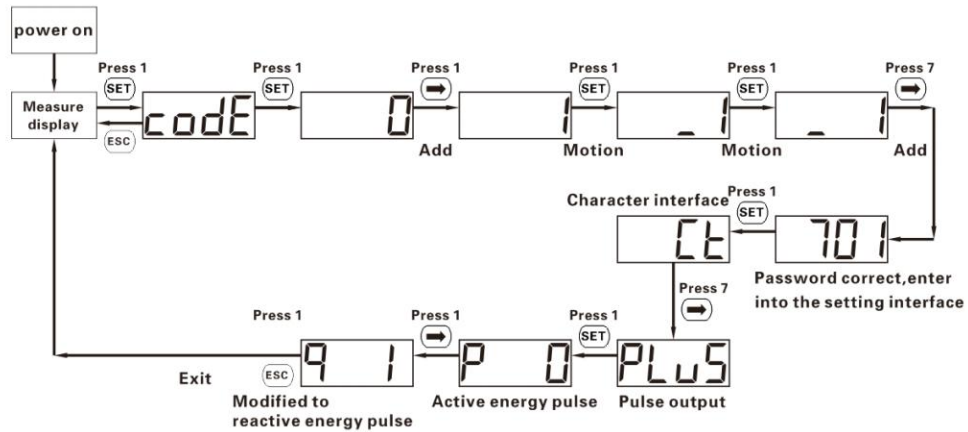


Please double check the wiring and power on the device.

5.4 Set meter ratio

Button description: “SET” button represents “confirmation” or “cursor shift” (when entering the number), “ESC” button represents “exit”, “→” button represents “add”. The default password is 701.

Please set the current ratio rather than the voltage ratio.



VI. Firmware Upgrade & Anti-injection Settings

6.1 DIN-Rail Logger Configuration Page

6.1.1 Prepare a computer/smart phone that can connect to wireless network.

6.1.2 Connect to logger AP (Please do Not connect the cable when configuring the logger.)

Select and connect AP XXXXXXXXX in the network list (XXXXXXXXX means logger SN) .



6.1.3 Log in to logger WEB page

Open a browser and enter 10.10.100.254.

Username: admin

Password: admin



Notice:

Supported browser: IE 8+, Chrome 15+, Firefox 10+

Login

http://10.10.100.254

Username

Password

OK Cancel

Status	Device information	Help
Wizard	Device serial number: 1609488478	The device can be used as a wireless access point (AP mode) to facilitate users to configure the device, or it can also be used as a wireless information terminal (STA mode) to connect the remote server via wireless router.
Wireless	Firmware version: H4.01.51MW.2.01W1.0.52(2017-02-071-D)	
Cable	Wireless AP mode: Enable	
Advanced	SSID: AP_1609488478	
Upgrade	IP address: 10.10.100.254	
Restart	MAC address: BC:54:F9:F9:7F:98	
Reset	Wireless STA mode: Enable	
	Router SSID: TP-LINK_B7F7	
	Signal quality: 0%	
	IP address: 0.0.0.0	
	MAC address: BC:54:F9:F9:7F:99	
	Cable mode: Disable	
	IP address: _____	
	MAC address: _____	
	Connected Inverter	
	Remote server information	

Ver:1.0.52

6.2 Anti-injection Settings

Default: Anti-injection Function: ON.

6.2.1 If Anti-injection function is not required, select “Disable” .

The screenshot shows the 'Anti-Injection Setting' page. On the left is a navigation menu with options: Status, Wizard, Wireless, Cable, **Advanced**, Working mode, Remote server, Port setting, Access point, Anti-injection, Upgrade, Restart, and Reset. The main content area is titled 'Anti-Injection Setting' and contains three sections:

- Anti-Injection:** A dropdown menu is set to 'Disable'. A red box highlights this dropdown and the 'Save' button below it.
- CT Ratio Setting:** A text input field contains the value '1', with a 'Save' button below it.
- Power Setting(W):** A text input field contains the value '100'. Below it is a note: 'Note: >0 Purchasing electricity from grid <0 Feed-in to grid', followed by a 'Save' button.

6.2.2 If Anti-injection function is required, select “Enable” , set CT ratio and power.

This screenshot is identical to the one above, but the 'Anti-Injection' dropdown menu is now set to 'Enable'. The 'Save' button below it is highlighted with a blue background.

CT Ratio Setup Instruction

Default:1.

Single-Phase System: CT ratio setup is not required.

Three-Phase System: CT ratio setup is required.(e.g.If CT is 200/5A, please enter 40.)

Power Setup Instruction

Set power according to actual situation. (Default: 100W.)

E.g. If you set 100W, which means inverter adjustable production power is 100W less than load power and will continue to buy 100W from the Grid.

If you set 0W, which means all inverter production power is used for load and grid-tie power is 0W.

If you set -100W, which means inverter production power is used for load and there is still 100W

for grid-tie.)

Please Note: If the inverter load power is less than min. production power, the surplus power will go on grid.

VII. Networking Setup

7.1 Go to “Setup Guide” and click “Start” .

Status	<p>Dear user:</p> <p>Thank you for choosing our device. Next, you can follow the setup wizard to complete the network setting step by step; or you can select the left menu for detailed settings.</p> <p>*Note: Before setting, please make sure that your wireless or cable network is working.</p> <p><input type="button" value="Start"/></p>
Wizard	
Wireless	
Cable	
Advanced	
Upgrade	
Restart	
Reset	

7.2 WiFi Configuration (If Ethernet is selected, please skip this step.)



Notice:

- 1.Router name and password cannot have special characters, e.g. \ ; , = ' ” .
- 2.5G WiFi is not supported.

7.2.1 Select “Wireless connection” .

Status	<p>Connection Settings:</p> <p><input checked="" type="radio"/> Wireless connection <input type="radio"/> Cable connection</p> <p>Wireless <input type="text" value="Enabled"/></p> <p><input type="button" value="Back"/> <input type="button" value="Next"/></p> <p>1 2 3 4 5 6 7</p>
Wizard	
Wireless	
Cable	
Advanced	
Upgrade	
Restart	
Reset	

7.2.2 Select WiFi router name.

Status	<p>Please select your current wireless network:</p> <table border="1"> <tr><td><input type="radio"/></td><td></td><td></td><td></td><td></td></tr> <tr><td><input type="radio"/></td><td></td><td></td><td></td><td></td></tr> <tr><td><input type="radio"/></td><td></td><td></td><td></td><td></td></tr> <tr><td><input type="radio"/></td><td></td><td></td><td></td><td></td></tr> <tr><td><input type="radio"/></td><td></td><td></td><td></td><td></td></tr> <tr><td><input type="radio"/></td><td></td><td></td><td></td><td></td></tr> <tr><td><input type="radio"/></td><td></td><td></td><td></td><td></td></tr> <tr><td><input checked="" type="radio"/></td><td>NETGEAR47</td><td>2c:30:33:d6:3f:fc</td><td>100%</td><td>10</td></tr> <tr><td><input type="radio"/></td><td></td><td></td><td></td><td></td></tr> <tr><td><input type="radio"/></td><td></td><td></td><td></td><td></td></tr> </table> <p>*Note: When RSSI of the selected WiFi network is lower than 15%, the connection may be unstable, please select other available network or shorten the distance between the device and router.</p> <p>Refresh</p> <p>Add wireless network manually:</p> <table border="1"> <tr><td>Network name (SSID) (Note: case sensitive)</td><td>NETGEAR47</td></tr> <tr><td>Encryption method</td><td>WPA2PSK</td></tr> <tr><td>Encryption algorithm</td><td>AES</td></tr> </table> <p>Back Next</p>	<input type="radio"/>					<input type="radio"/>					<input type="radio"/>					<input type="radio"/>					<input type="radio"/>					<input type="radio"/>					<input type="radio"/>					<input checked="" type="radio"/>	NETGEAR47	2c:30:33:d6:3f:fc	100%	10	<input type="radio"/>					<input type="radio"/>					Network name (SSID) (Note: case sensitive)	NETGEAR47	Encryption method	WPA2PSK	Encryption algorithm	AES
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Advanced																																																									
Upgrade																																																									
Restart																																																									
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7.2.3 Enter router password.


Status	<p>Please enter the wireless network password:</p> <p>Password (8-64 bytes) (Note: case sensitive)</p> <p>Re-enter password</p> <p><input type="checkbox"/> Show Password</p> <p>Back Next</p> <p>1 2 3 4 5 6 7</p>
Wizard	
Wireless	
Cable	
Advanced	
Upgrade	
Restart	
Reset	

7.2.4 Modify AP password to enhance safety.

Status	<p>Enhance Security</p> <p>You can enhance your system security by choosing the following methods</p> <p>Hide AP <input type="checkbox"/></p> <p>Change the encryption mode for AP <input checked="" type="checkbox"/></p> <p>Encryption mode WPA2-PSK</p> <p>WPA encryption</p> <p>Encryption algorithm <input checked="" type="radio"/> TKIP <input type="radio"/> AES <input type="radio"/> TKIPAES</p> <p>Password (8 to 63 characters) 12345678</p> <p>Change the user name and password for Web server <input type="checkbox"/></p> <p>Back Next</p> <p>1 2 3 4 5 6 7</p>
Wizard	
Wireless	
Cable	
Advanced	
Upgrade	
Restart	
Reset	

7.2.5 WiFi configuration is done.

Status	<p>Configuration completed!</p> <p>Click OK, the settings will take effect and the system will restart immediately.</p> <p>If you leave this interface without clicking OK, the settings will be ineffective.</p> <p style="text-align: right;"> <input type="button" value="Back"/> <input type="button" value="OK"/> </p>
Wizard	
Wireless	
Cable	
Advanced	
Upgrade	
Restart	
Reset	

 **Notice:**
Click “Done” to reboot system, which might take 1 minute.

7.3 Ethernet Configuration (If WiFi is selected, please skip this step.)

7.3.1 Select “Cable connection”, and set Wireless: Disable.

Status	<p>Connection Settings:</p> <p> <input type="radio"/> Wireless connection <input checked="" type="radio"/> Cable connection <input type="radio"/> Wireless Disabled </p> <p style="text-align: right;"> <input type="button" value="Back"/> <input type="button" value="Next"/> </p> <p style="text-align: center;"> 1 2 3 4 5 6 7 </p>
Wizard	
Wireless	
Cable	
Advanced	
Upgrade	
Restart	
Reset	

7.3.2 Network Setup (Obtain an IP address automatically: Enable)

Status	<p>Please fill in the following information:</p> <p>Obtain an IP address automatically: <input type="button" value="Enable"/></p> <p>IP address: <input type="text" value="0.0.0.0"/></p> <p>Subnet mask: <input type="text" value="0.0.0.0"/></p> <p>Gateway address: <input type="text" value="0.0.0.0"/></p> <p>DNS server address: <input type="text"/></p> <p style="text-align: right;"> <input type="button" value="Back"/> <input type="button" value="Next"/> </p> <p style="text-align: center;"> 1 2 3 4 5 6 7 </p>
Wizard	
Wireless	
Cable	
Advanced	
Upgrade	
Restart	
Reset	

Notice:

Most routers support DHCP function to obtain IP address automatically. (Set DHCP function: ON)

If the router restricts IP connection, please select “Disable” and modify the parameter according to router.



Status	<p>Please fill in the following information:</p> <p>Obtain an IP address automatically Disable ▾</p> <p>IP address <input type="text" value="0.0.0.0"/></p> <p>Subnet mask <input type="text" value="0.0.0.0"/></p> <p>Gateway address <input type="text" value="0.0.0.0"/></p> <p>DNS server address <input type="text"/></p> <p style="text-align: right;">Back Next</p> <p style="text-align: center;">1 2 3 4 <u>5</u> 6 7</p>
Wizard	
Wireless	
Cable	
Advanced	
Upgrade	
Restart	
Reset	

7.3.3 Modify AP password to enhance safety.

Status	<p>Enhance Security</p> <p>You can enhance your system security by choosing the following methods</p> <p>Hide AP <input type="checkbox"/></p> <p>Change the encryption mode for AP <input checked="" type="checkbox"/></p> <p>Encryption mode <input type="text" value="WPA2-PSK"/></p> <p>WPA encryption</p> <p>Encryption algorithm <input checked="" type="radio"/> TKIP <input type="radio"/> AES <input type="radio"/> TKIPAES</p> <p>Password (8 to 63 characters) <input type="text" value="12345678"/></p> <p>Change the user name and password for Web server <input type="checkbox"/></p> <p style="text-align: right;">Back Next</p> <p style="text-align: center;">1 2 3 4 5 <u>6</u> 7</p>
Wizard	
Wireless	
Cable	
Advanced	
Upgrade	
Restart	
Reset	

7.3.4 Ethernet configuration is done.

Status	<p>Configuration completed!</p> <p>Click OK, the settings will take effect and the system will restart immediately.</p> <p>If you leave this interface without clicking OK, the settings will be ineffective.</p> <p style="text-align: right;">Back OK</p>
Wizard	
Wireless	
Cable	
Advanced	
Upgrade	
Restart	
Reset	

7.3.5 Connect logger and router via cable.

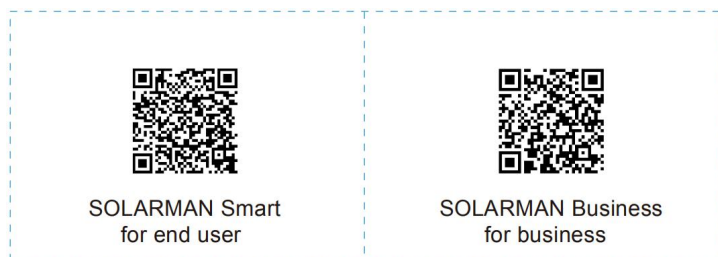
Notice:



1. If the signal strength is <15, it means Unstable. Please adjust router location.
2. SSID of router network can not exceed 30 characters. "Space" is excluded.
3. When WiFi logger is at STA mode, supported router channel range: 1-11.
4. WiFi router name and password does not support special characters, e.g. \ ; , = ' ". It is recommended to choose a-z, A-Z, 0-9 as router SSID and password.
5. Some router might restrict WiFi connection. It is recommended to turn off Qos function.
6. WiFi supports standard encryption method (WEP/WPA2PSK/WPA2PSK), mixed encryption method is not supported.
7. Turn on router DHCP function, or WiFi cannot connect to router.
8. If you have problem during signal searching or router connection, you can reboot the router or restore factory settings. If the problem still exists, you can contact customer service for help.

VIII. USER MANUAL for SOLARMAN APP

8.1 Download app



iPhone: Search "SOLARMAN Smart" / "SOLARMAN BUSINESS" in Apple Store.

Android: Search "SOLARMAN Smart" / "SOLARMAN BUSINESS" in Google Play.

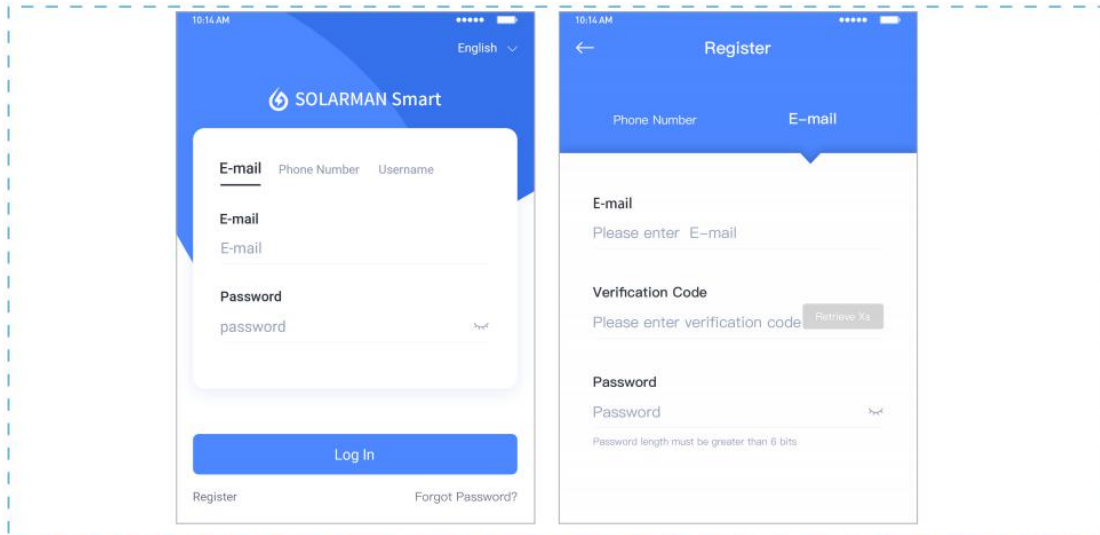
You can also login via WEB as below:

pro.solarmanpv.com

home.solarmanpv.com

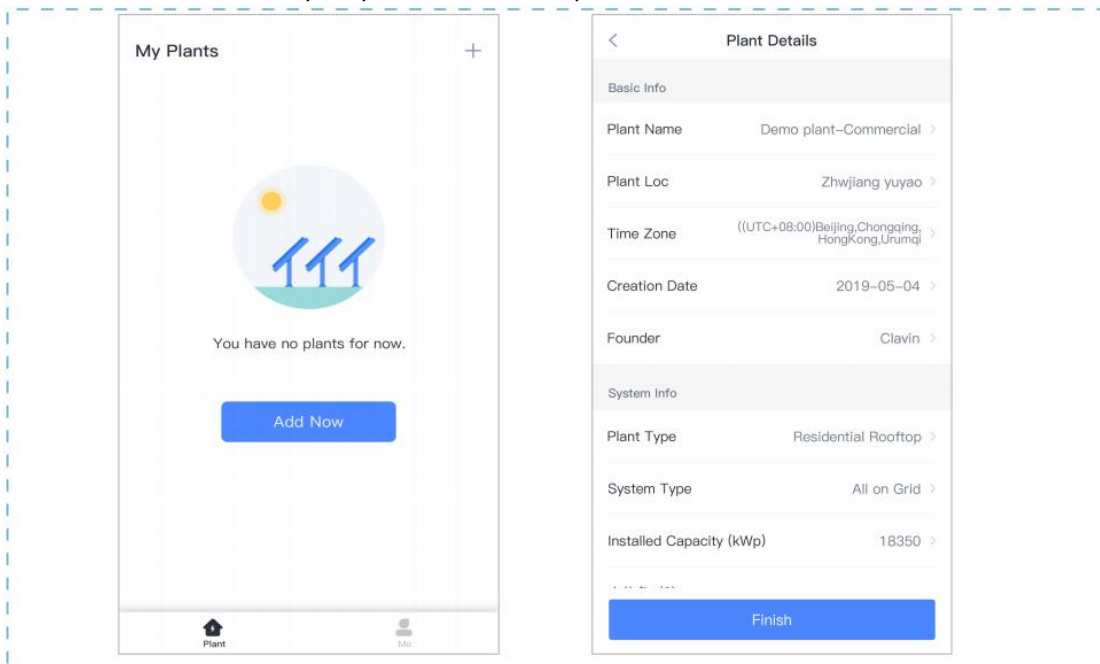
8.2 Registration on SOLARMAN SMART

Go to SOLARMAN SMART and register. Click "Register" and create your account here.



8.3 Create a Plant

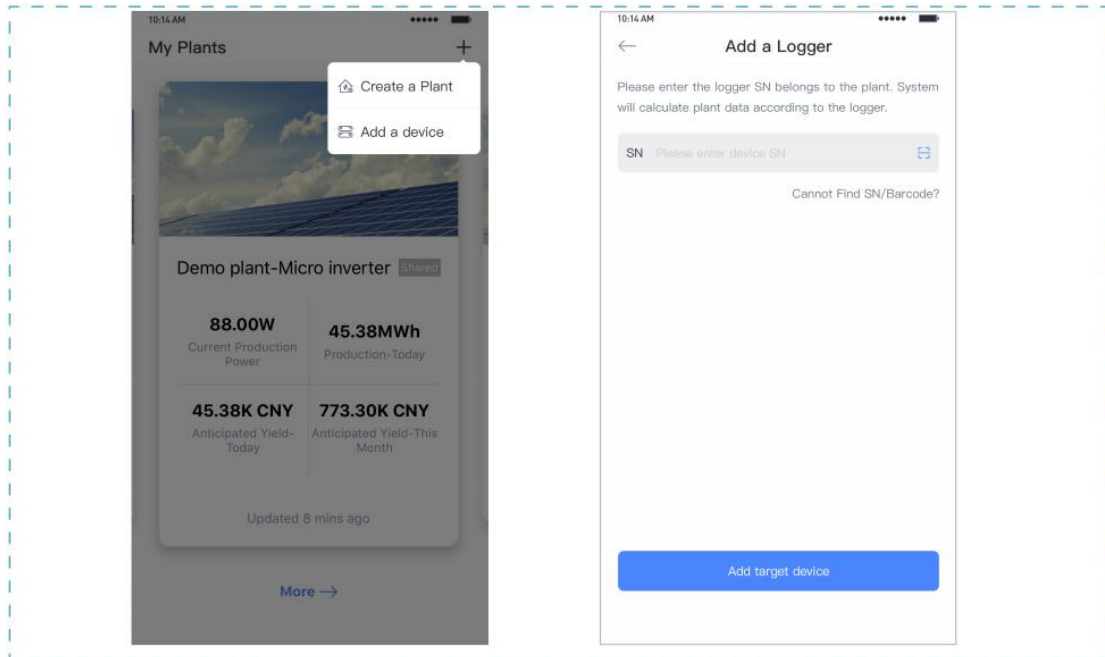
Click "Add Now" to create your plant. Please fill in plant basic info and other info here.



8.4 Add a Device

Method 1: Enter logger SN manually.

Method 2: Click the icon in the right and scan to enter logger SN You can find logger SN in the external packaging or on the logger body.



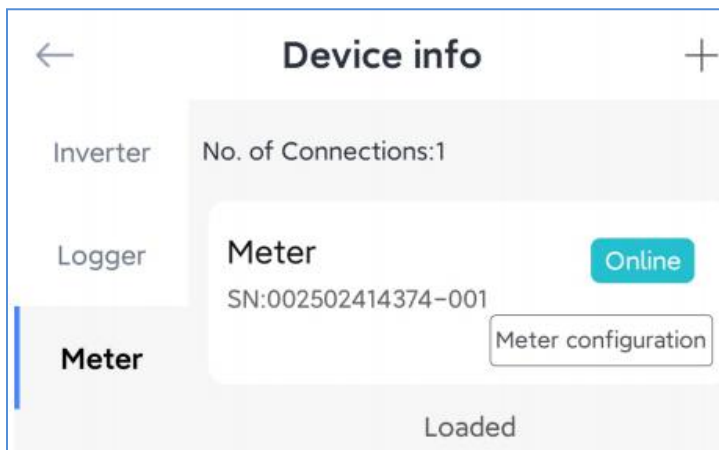
8.5 Meter Configuration

The aim of meter configuration is to send meter data to platform and calculate meter data.

8.5.1 Add a meter to plant via logger

SOLARMAN platform does not support adding a meter directly. Users can add a logger first and logger will send meter data to platform.

Connect the devices first. After logger is powered on and data is transmitting, target meter will be listed on device list.



8.5.2 Meter Configuration

Go to 「Device Info」 and click “Configure” button.



Meter configuration

Done

Please configure the meter CT properties according to the meter installation.



Apply to

- Single-phase System
- Three-phase System

Installation site

Grid ▾

CT installation site (Click arrow to switch)

Energy
Purchase
Grid-connected

