Sunsynk Product Introduction

Company Introduction and History

ABOUT SUNSYNK

Established 20 years ago, Sunsynk is part of Global Tech China Group based out of Hong Kong with manufacturing and design bases in Ningbo China. They partnered with the Science Department of Ningbo University, where their technology is jointly developed. The company has to date approximately 80 staff working on their projects at any one time.

Their core technology is micro storage, power generation and control systems. Sunsynk products have been designed to suit the needs of our customers with attention to detail. These products include inverters, solar panels, power packs, charge regulators, and solar lighting

Currently, Sunsynk exports to over 20 countries, including South Africa, the Philippines, Thailand, Australia, New Zealand, and the United Kingdom, where solar lighting and power storage products have proven to be very popular.

MISSION STATEMENT

To provide high-quality green technology that will benefit both our customers and the environment. We will achieve this by innovative design, high standards in production, and great value for money within the world of renewable energy.

SUN SYNK®
No Power No Problem

SegenSolar (Pty) Ltd

Product Range Overview

	3.6kW On-Grid Parity Inverter with Storage +7Kw MPPT
	5.5kW On-Grid Parity Inverter with Storage
	8.8kW On-Grid Parity Inverter with Storage

	3 Phase 8 kW On-Grid Parity Inverter with Storage
	3 Phase 10 kW On-Grid Parity Inverter with Storage
	3 Phase 12 kW On-Grid Parity Inverter with Storage

	30 Kw 3 Phase String inverter
	50 Kw 3 Phase String inverter
	80 Kw 3 Phase String inverter

	1.6 Kw Micro Inverter with wifi
	2 Kw Micro inverter with wi Fi
	MECD

	Solarman GSM Data Logger
	Solarman WiFi Data Logger
	Sunsynk Lan / Wifi Data Logger

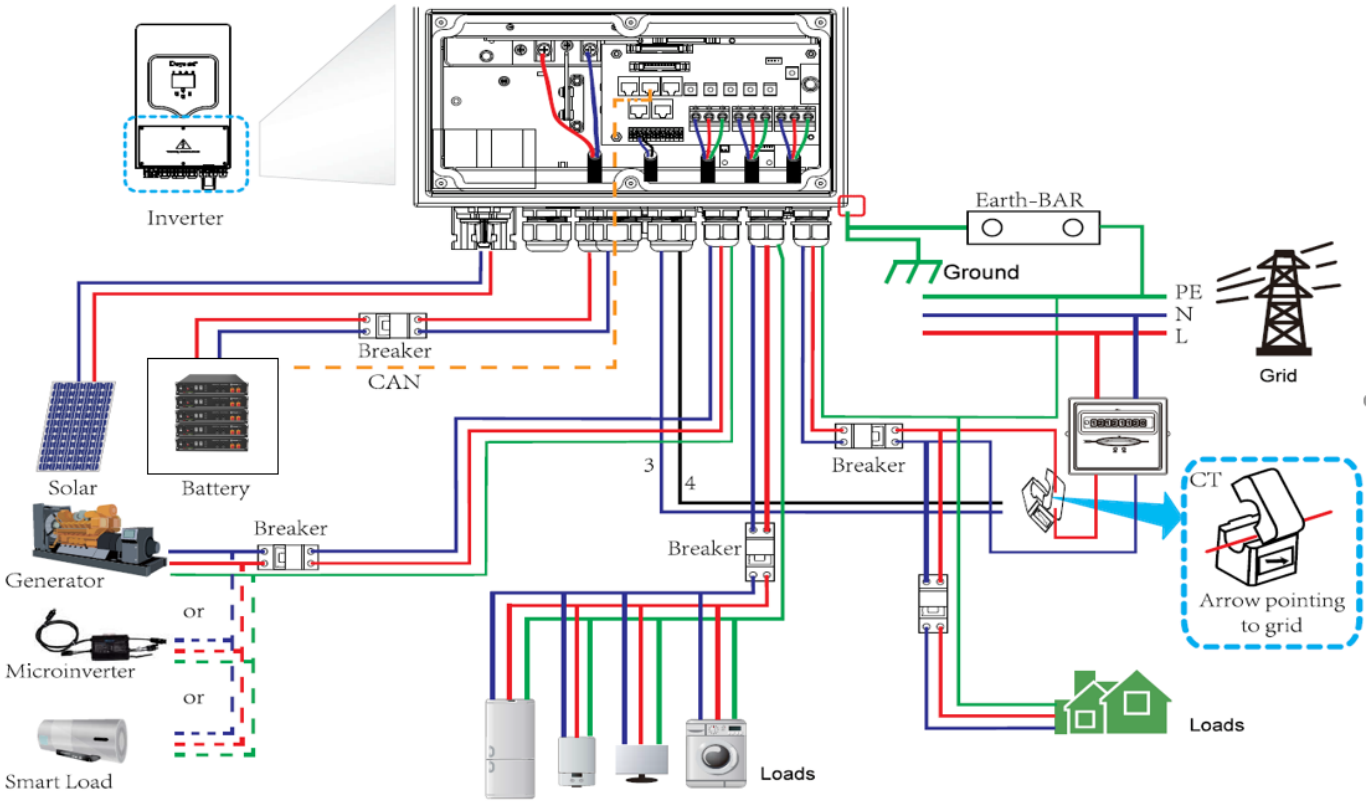
Sunsynk Hybrid Inverter Application

Applications

- Hybrid, Off – Grid, On – Grid, UPS
- Home use
- Marine
- Remote locations with Solar and Wind generators
- Telecommunication sites
- Military locations
- Wind Turbines

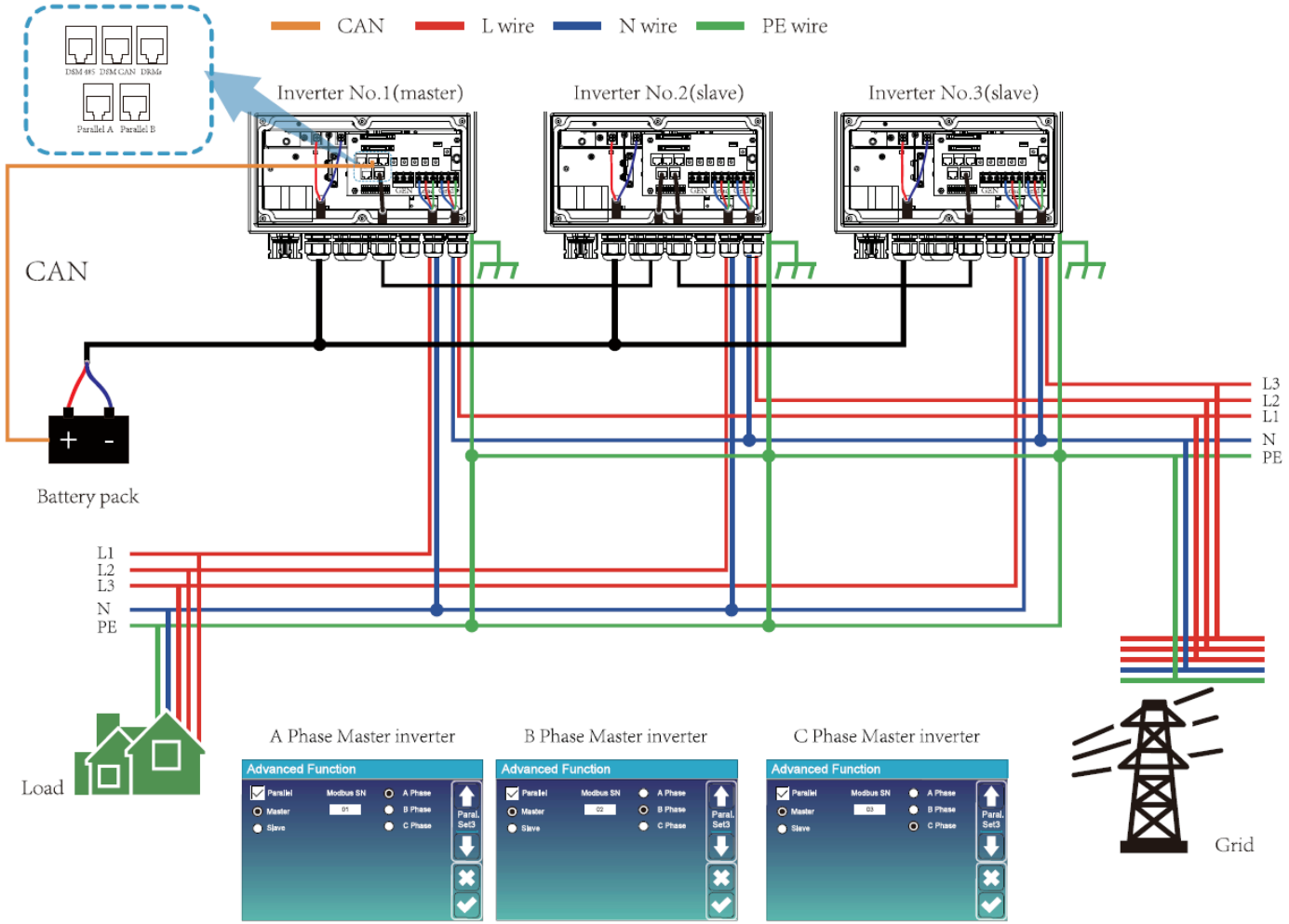
System schematics

Single Phase



System schematics

Three Phase



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Product Capabilities

Sunsynk 5kW

- 120A Charge / Discharge Current
- 5000W AC and UPS Power
- Max PV of 6500W
- Max Grid-tie Power of 5500W
- Dual MPPT
- RS485/CAN
- Self-adaption to BMS

Sunsynk 8kW

- 190A Charge / Discharge
- 8000W AC and UPS Power
- Max PV of 10400W
- Max Grid-tie Power of 8800W
- Dual MPPT
- RS485/CAN
- Self-adaption to BMS

Product Limitations

- One registered user at a time for a Wi-Fi data logger
- Must only be installed with Li-ion batteries that are approved as compatible
- Rated discharge power can only be safely achieved with sufficient battery capacity
- No warranty extension

Key USPs

- Dual MPPTS
- Intelligent battery management function
- AC/Solar/Generator charger priority
- Parallel function On-Grid & Off-Grid up to 16 units
- Can be configured as a three phase system by using 3+ units
- Compatible with both lead-acid and Li-ion batteries
- Programmable battery charging with a single battery
- Comes with Wi-Fi Data Logger for Online monitoring
- LCD Touchscreen
- Limit Function (excess power)
- NRS097-2-1:2017 certified

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Battery Compatibility List

Brand	Model	RS485 or CAN
Pylon	US2000	RS485 or CAN
	US2000-Plus	RS485 or CAN
	US2000C	RS485 or CAN
	US3000	RS485 or CAN
	US3000C	RS485 or CAN
	UP5000	RS485 or CAN
FreedomWon	Freedom Lite Commercial	CAN
	Freedom Lite Home	
	Freedom Lite Business	
Kodak	Force L1	RS485 or CAN

Installing a Sunsynk Hybrid with Pylontech

- Hybrid inverter overview & main components
- Installing battery
- Connecting PV
- Programming
- Work Mode
- Programming
- System monitoring
- Fault finding
- Warranty

Unpacking the Sunsynk Inverter

- 1 x Sunsynk Inverter
- 1 x Installation Manual
- 1 x Temperature sensor, allen key, allen key screws
- 1 x Current Transformer
- 2 x pairs of MC4 connectors (Sunsynk 5kW)
- 4 x mounting bolts and nuts
- 1 x Wi-Fi Data Logger

Before starting the Sunsynk Hybrid install

- After unpacking, please check the product and packing list, if the product is damaged or there are missing components, please contact SegenSolar.
- Before installation of battery, ensure that the battery is turned off.
- Double check the polarity, do not swap around the positive and negative leads.
- Do not connect the battery directly to AC.
- The Sunsynk is designed for 48V battery systems, please do not connect any other voltage.
- Battery system must be well grounded with a resistance less than 1Ω.
- The pylontech battery can only be used with inverters approved by Pylontech, such as the Sunsynk

Installation

Installing the battery

- **Depending on the Sunsynk model, battery connections are different as shown below.**

Battery connection of the 5kW model

Battery connection of the 8kW model

Installation

Installing the battery

- **Minimum recommended cable the 5kW and the 8kW are 35mm2 and 50mm2, respectively**
- **Keep battery off, connect power cables and communication cable from inverter to battery**
- **Dip switches: according to your battery setup – CAN all dip switches should be off.**
- **Ensure that the connection instructions for the battery are followed according to the battery manual**
- **Ensure that all cable connections are secure.**
- **Ensure you have the correct battery communication cable for BMS communication.**

	Inverter	Freedomwon Battery	Pylontech Battery
CAN - H	PIN 4	PIN 7	PIN 4
CAN - L	PIN 5	PIN 8	PIN 5

PROTECTION DEVICES

Sunsynk inverter must always be installed with a DC Breaker or fuse between the inverter and battery to protect both products and cables. The correctly sized fuse will be required according to the inverter current ratings.

Installation

Sizing Pylontech battery bank correctly

- **Minimum recommended batteries to produce the rated kW of the Sunsynk**

For the US2000B the nominal discharge current is 25A per battery, 37A for the US3000B/C and 50A for the UP5000.

For the Sunsynk 5kW and 8kW, they have a Max. charge and discharge current or 120A and 190A respectively.

Therefore, minimum recommended batteries are as follows:

Min. batteries = 120A/25A = **5 x US2000B for the 5kW**

Min. batteries = 190A/25A = **8 x US2000B for the 8kW**

Min. batteries = 120A/37A = **4 x US3000B/C for the 5kW**

Min. batteries = 190A/37A = **6 x US3000B/C for the 8kW**

Min. batteries = 120A/50A = **3 x UP5000 for the 5kW**

Min. batteries = 190A/50A = **4 x UP5000 for the 8kW**

Installation

Sizing Freedom Won battery correctly

- **Minimum recommended batteries to produce the rated kW of the Sunsynk**

The Sunsynk 5kW and 8kW, have a Max. charge and discharge current or 120A and 190A respectively.

Since the **Freedom** Won batteries have high continuous charge and discharge currents recommended batteries for both 5kW and 8kW are as follows:

Home 5/4 *

Home 10/8

Home 15/12

Home 20/16

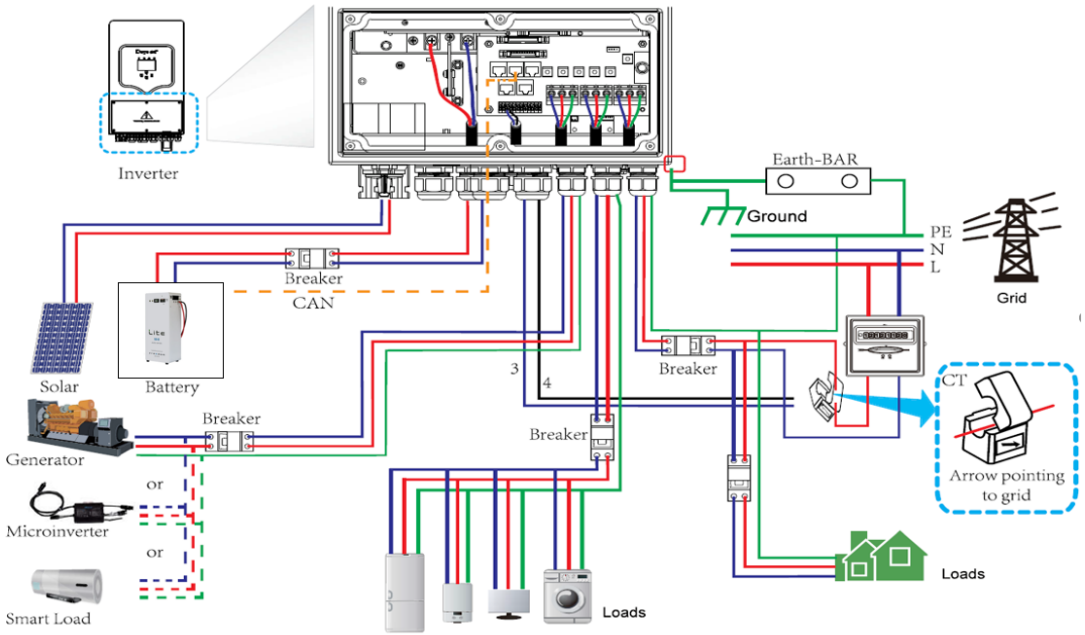
Home 30/24

Business 40/32

Business 60/48

Business 80/64

***Pay attention to Recommended Charge/discharge current**



Installation

Segen Solar 70% rule with regards to pairing hybrid inverters and batteries

- Incorrect sizing of battery banks with certain inverters can cause damage to batteries as inverters will be discharging higher currents that the battery can handle.
- Segen has therefore incorporated the 70% rule to ensure that only sound hybrid systems that are purchased from Segen Solar are in accordance with the manufacturer recommendations and warranty guidelines to keep the design life of the equipment.
- The 70% rule states that the battery bank should be able to supply at least 70% of the inverters rated kW output.

Installation

Connecting PV

- Ensure PV switch is in the off position before connecting
- Make sure the maximum Open circuit voltage is not exceeded.

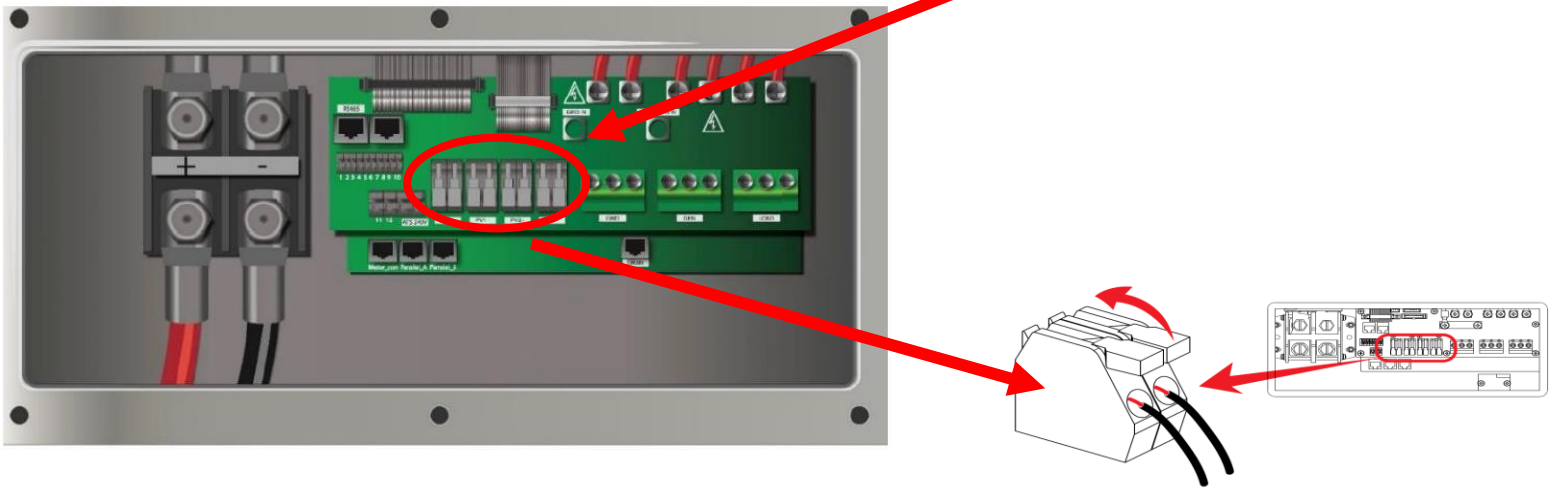
NB: 5kW (MC4) and 8kW (Push pin connector) PV connections are different

5kW: Insert MC4 cables into highlighted area and secure connections before switching on

Installation

Connecting PV

8kW: inverter uses terminal block push pin connector for the PV connections as shown in the image



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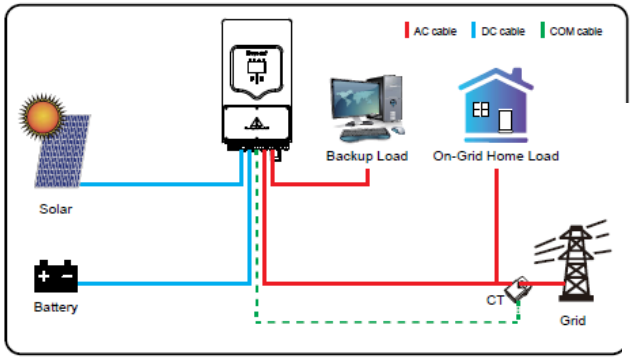
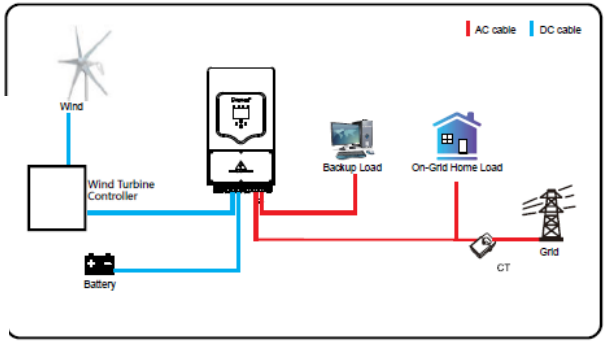
Six Work Modes

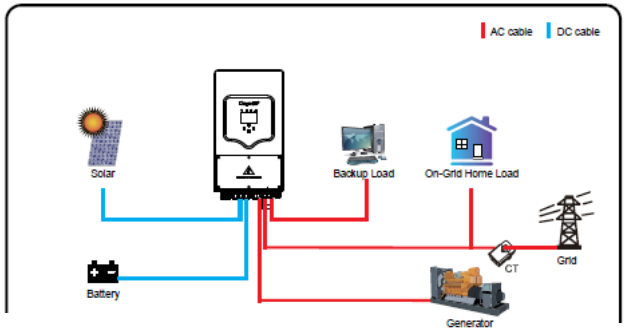
Mode I:Basic



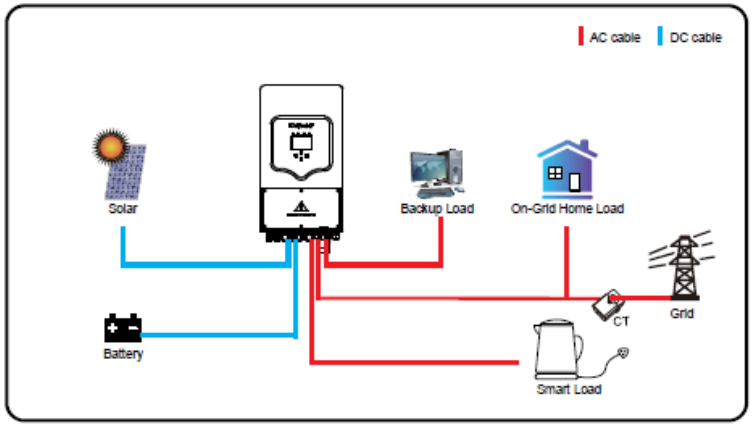
Mode II: With Wind Turbine



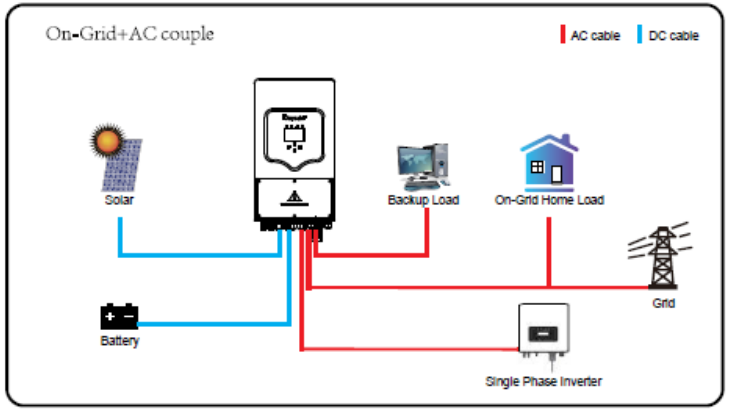
Mode III: With Generator



Mode IV: With Smart-Load



Mode V: With On-Grid Inverter

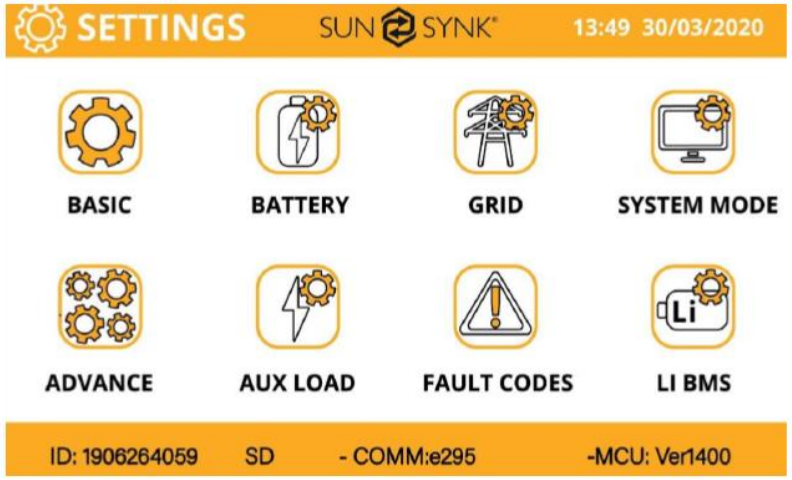


Contact SegenSolar (PTY) Ltd | e: info@segensolar.co.za | t: 08780 20663

Installation

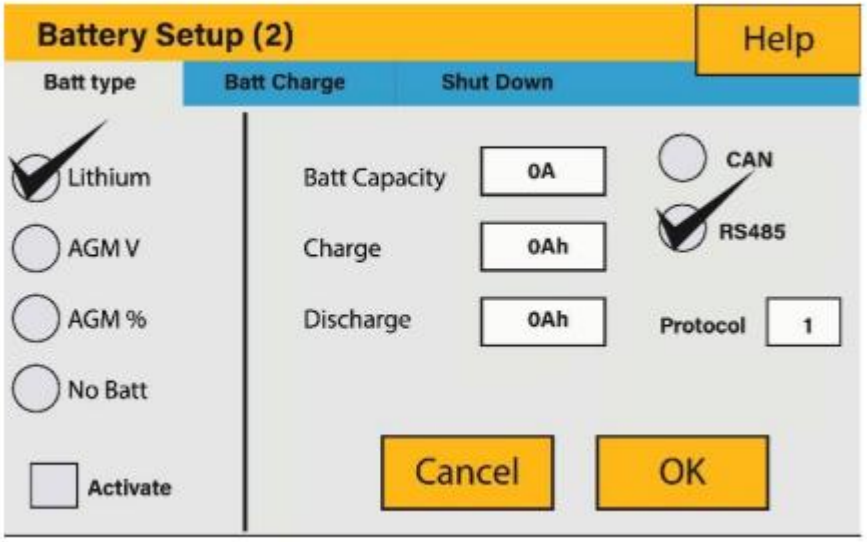
Programming

- To access the setup page, click the gear icon on the top right of the navigation menu
- All the settings can be done from here
- The system mode page is the 'controller' of the inverter and can be used to configure the inverter to operate in different ways



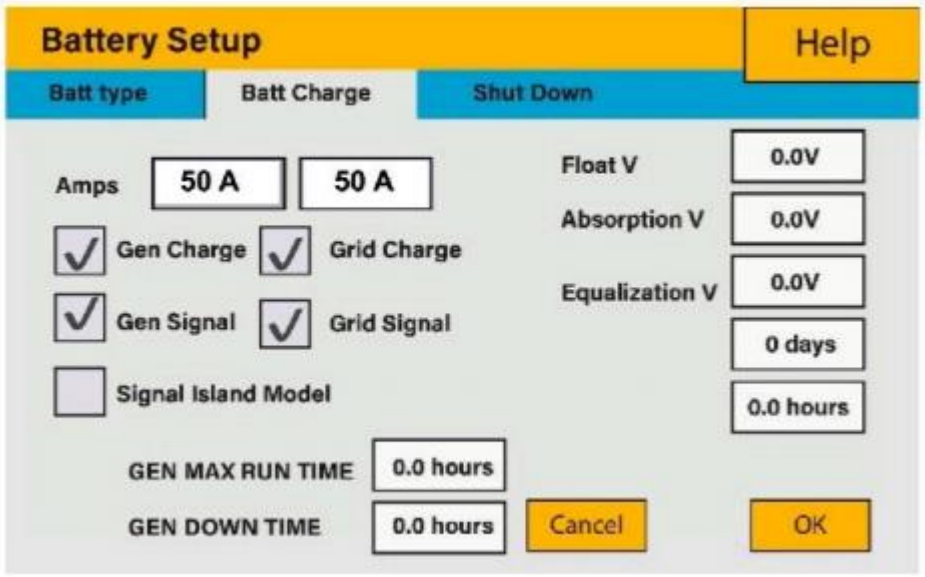
Battery Programing

- **Press “Batt type”.**
- **Choose battery mode “Lithium”**
- **input the capacity of the battery, charge/discharge currents according to the battery bank.**
- **For the protocol, please ensure that you follow the notes on the compatibility table as per manual.**



Battery Programing

Press “Batt Charge”.



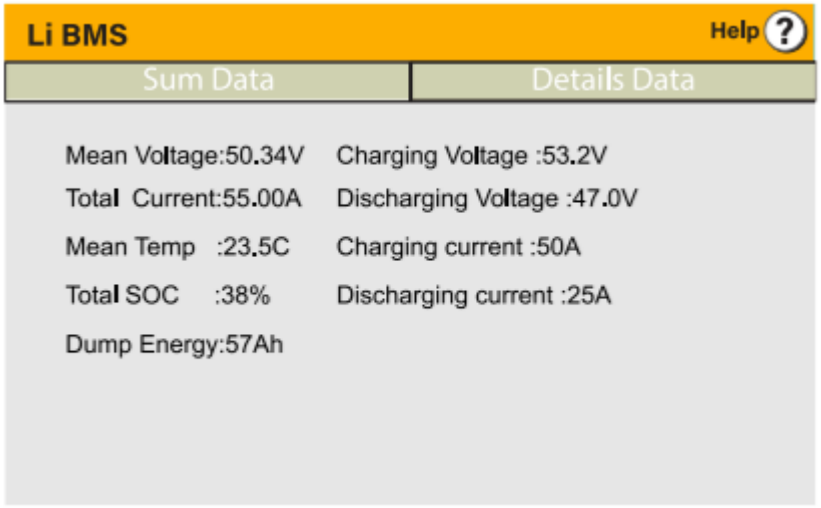
Battery Programing

Press “Shut Down”.

Important to note, you need to press OK for settings to be saved.

Battery Programing

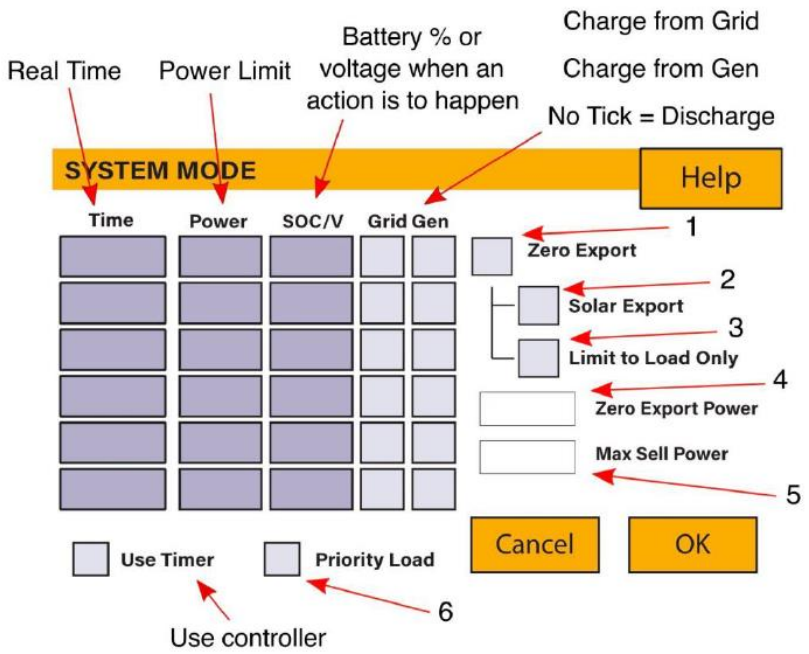
SUCCESS



Installation

Programming

1. Tick this box in order to not export power back to the grid (the CT coil will detect power flowing back to the grid and will reduce the power of the inverter to supply the local load)
2. Tick this box if you wish to export your solar power back to the grid
3. Tick this box if you only want to supply power to the load side of the inverter
4. Zero Export Power is the amount of power flowing from the grid to the inverter.
5. This controls the maximum overall power, both to the load and grid ports combined.
6. Tick this box if you wish the solar panels prioritize power to the load. If you untick, the solar will prioritize the power to charge the batteries

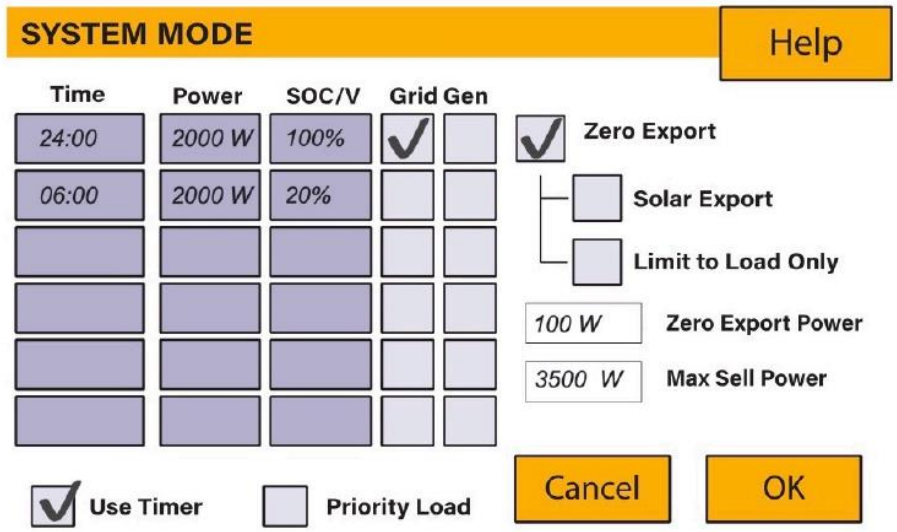


Installation

Programming

On-Grid no PV

1. **Select 'Use Timer' if you would like to choose a time to charge and discharge your batteries. For Time of use tariffs.**

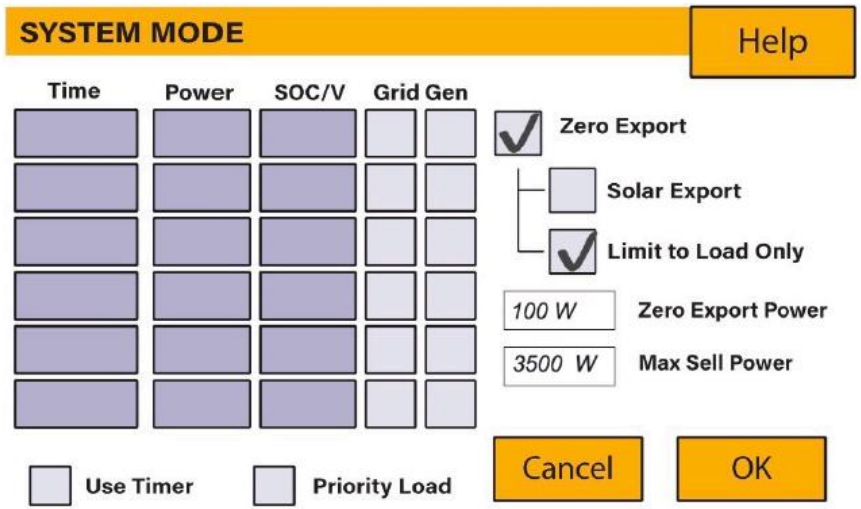


Installation

Programming

On-Grid with UPS

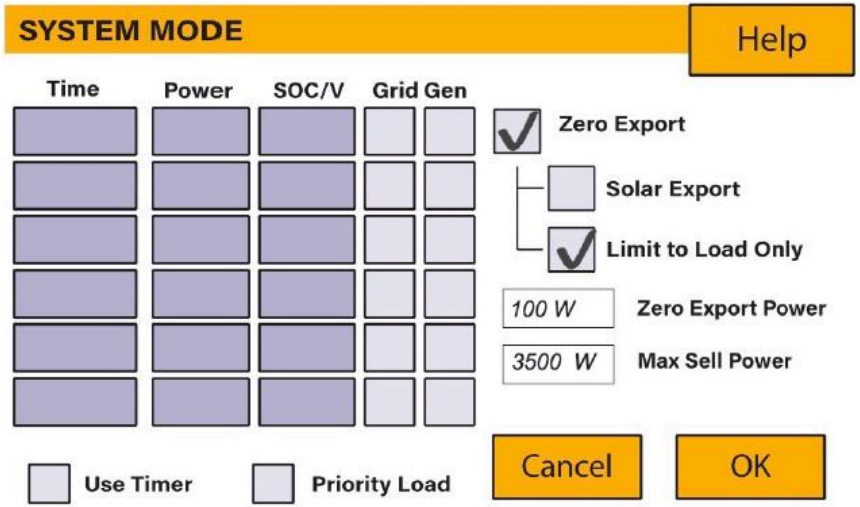
1. In this application, there is no need to use the timer. You must tick the 'Zero Export' box and set the Zero Export Power
2. Tick 'Limit Power to Load Only' and set the inverter power



Installation

Programming

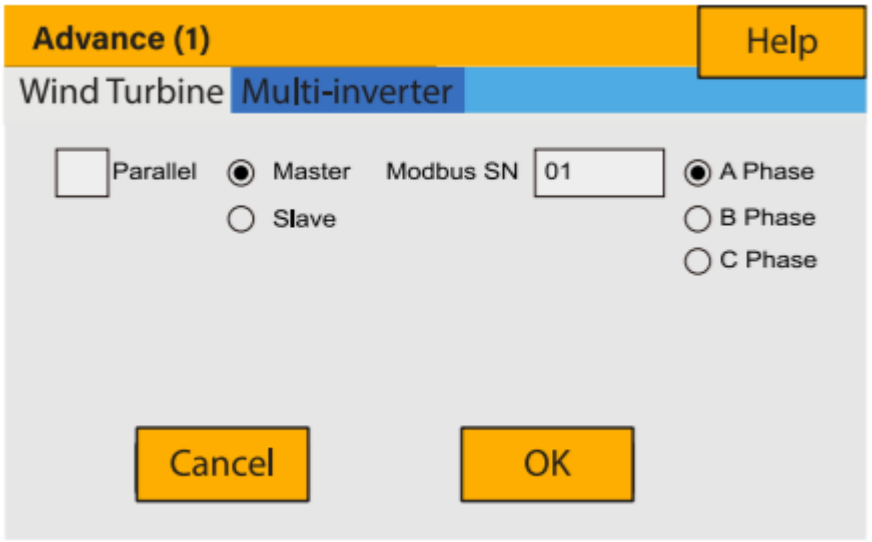
On-Grid With PV and Battery usage



Installation

Programming

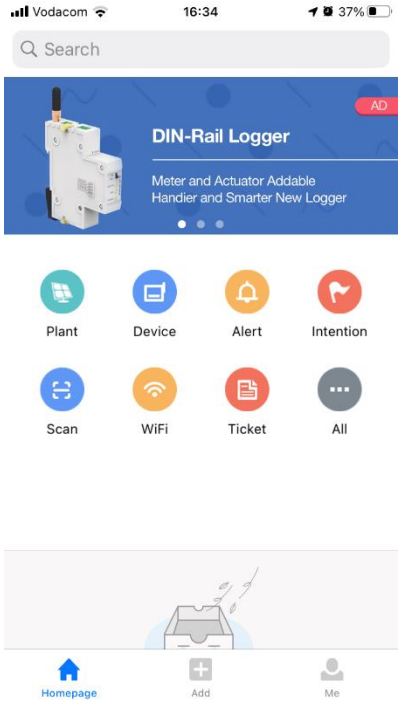
3 phase and parallel systems

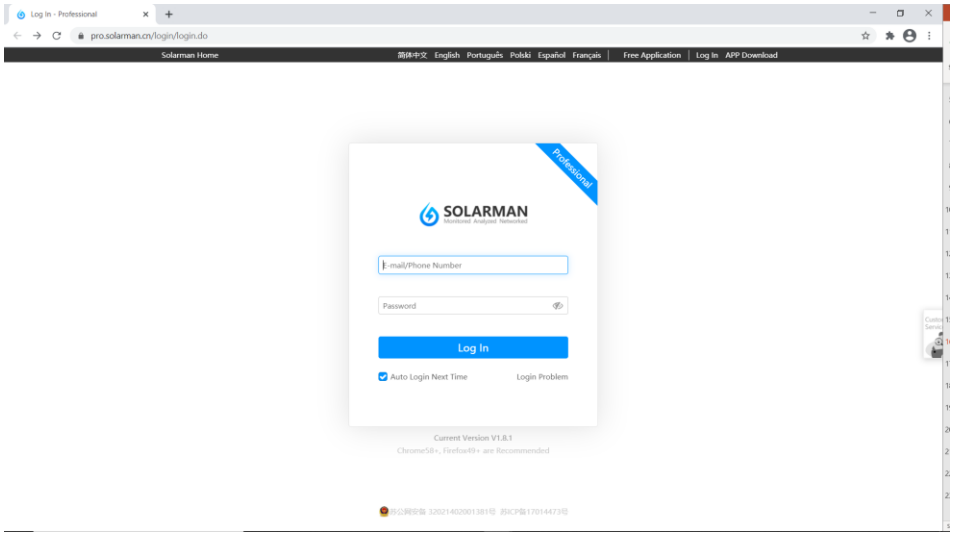


Monitoring platform

http://pro.solarman.cn/

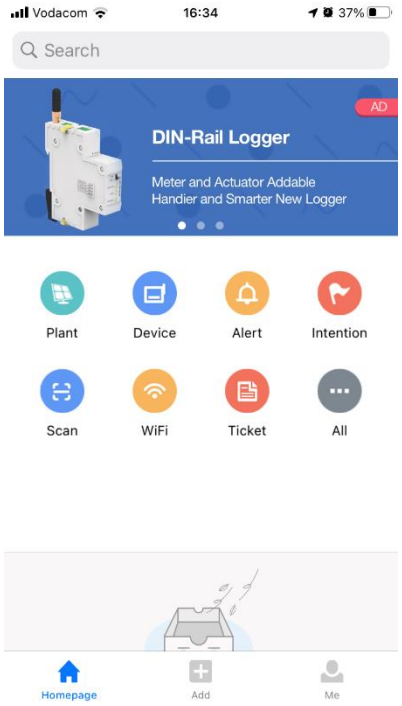
- **Compatible with the SolarMan pro App via Wifi data logger**
- **Available on Apple Store and Google Play**
- **Web Platform**





Register an account –Mobile App

1. **Use Solarman Pro App**

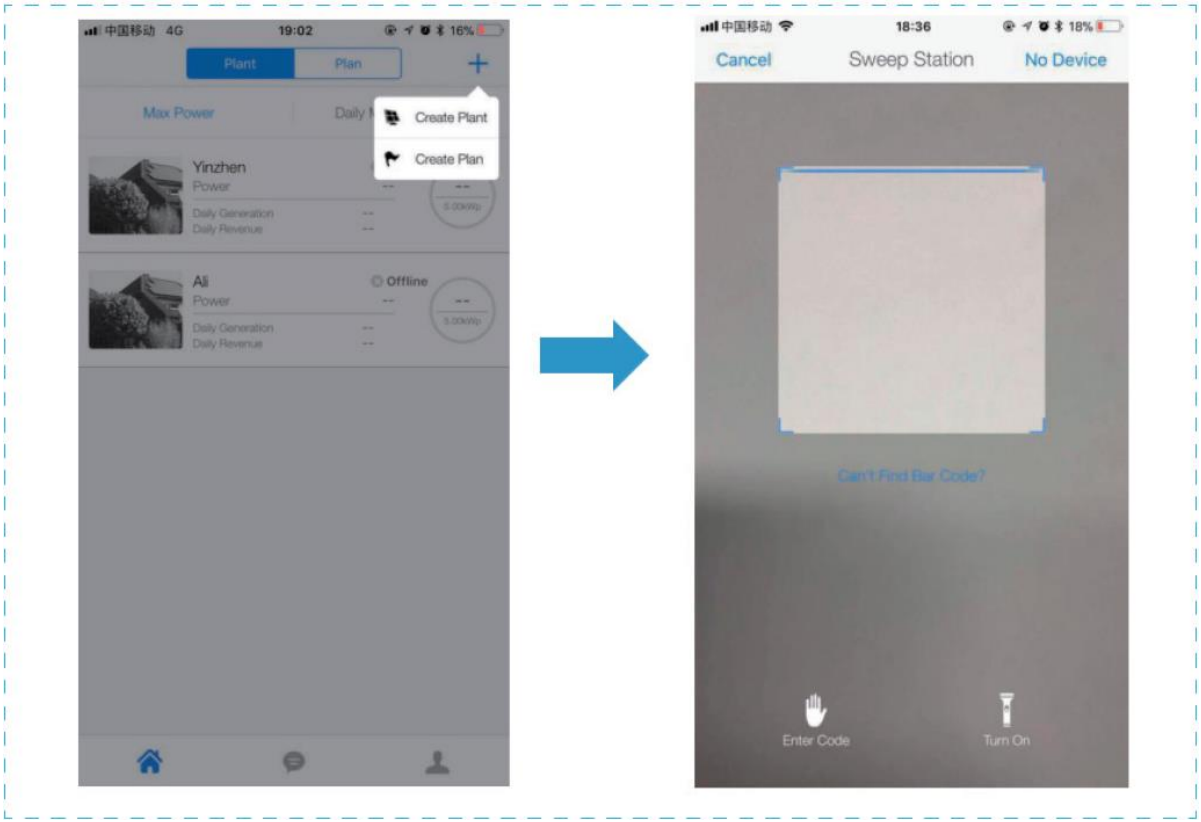


2. **Hold down the Button on the logger for 10 seconds till the lights flash.**

Register an account

3. Create Plant

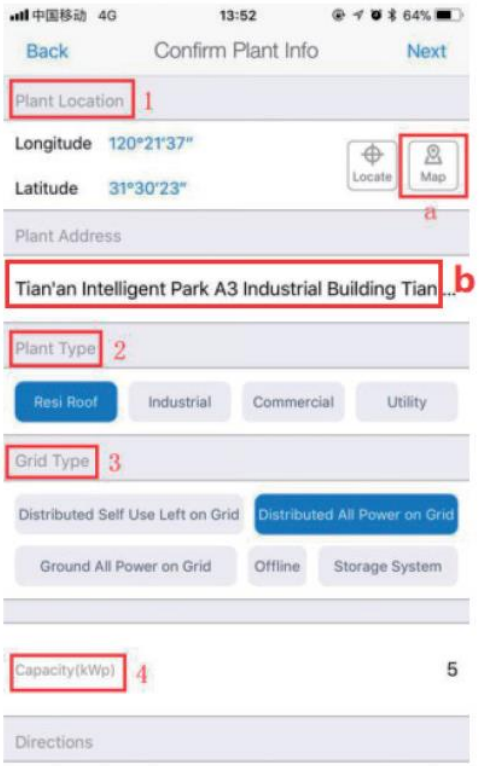
3.1 Click [+] and select [Create Plant]. Then scan the serial number of the stick logger, or manually enter the serial number. (This is marked on a label on the data Logger / Dongle)

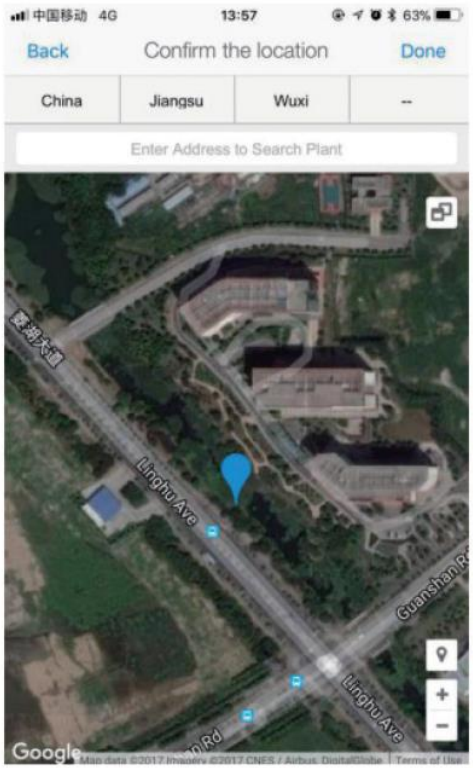


Register an account

3.2 Edit plant information.

1) Confirm your plant location
2) Select your plant type
3) Select your grid type
4) Fill in plant capacity





Register an account

3.3 Input Plant Name

Suggested name format “location + name + capacity”

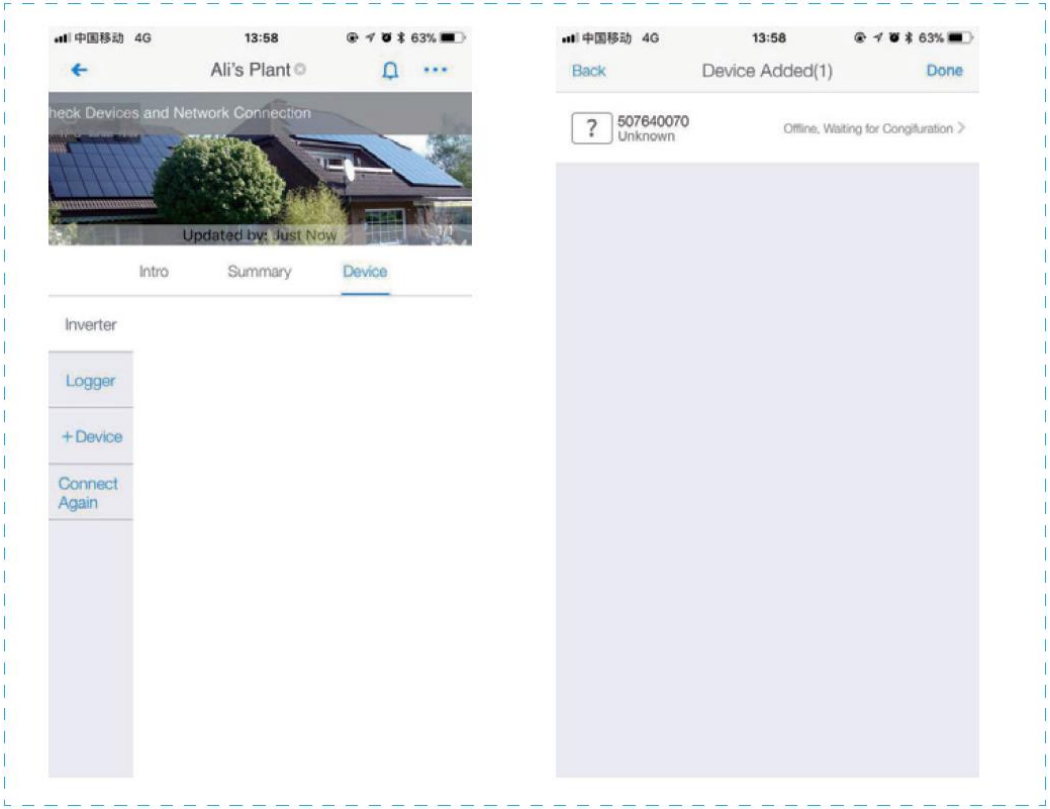
New plant should now be visible on Homepage

3.4 New plant should now be visible on Homepage

Register an account

4. Wi-Fi Connection

Select the plant and click [Connect again] in the tab [Device]. Click on device and click next.



Wifi Connection

1. Make sure you are connected to the wifi of the house.
2. It will ask you for the houses wifi password.
3. It will then ask you to connect to the Access point of the Logger. Go to your wifi connections on your phone, under settings, and connect to the access point of the Logger (AP_XXXXXXX)
4. Go back to the app and continue.
5. Enter Data logger password. It is on the logger.
6. It will then configure the Logger to connect to the houses wifi.
7. Once done connect back to houses wifi with the phone and the Plant will start logging information.
8. Add all loggers to the plant.

Note wifi does not work on 5G wireless connections.

Troubleshooting common issues

F13 – Working mode change.

- **Reported when battery mode is changed to 'No battery' mode while system is still running**
- **Solution. Reset the system**

F18 AC – Over current fault of the hardware

- **Heavy surge current or many loads switching on at the same time**
- **Solution. Essential and non-essential load should be separated**

F20 – DC Over current fault of the hardware.

- **Battery not being able to deliver current to the inverter of the module**
- **A high current overload on startup**
- **Solution. Check battery discharge settings and C-rating**

F29 – Parallel communication cable fault.

- **Communication cable no functioning correctly (wrong cable, wrong connection, or incorrect settings on inverter)**
- **Solution. 1) Switch of all inverters and reset them**
- **2) Check inverter models if they are the same, if they have correct and same operating system**
- **3) Replace comms cable with shorter cables. If possible, ensure the middle inverter is the master and other are slaves**
- **4) Check if all batteries are on the same busbar**

Troubleshooting common issues

F35 – No AC grid.

- **No AC grid present, i.e., no power coming into the system**
- **Solution. Find fault in your AC supply**

F47 – AC over frequency / F48 AC lower frequency.

- **Solution. Check the frequency settings on inverter and adjust frequency accordingly**

F64 – Heat sink high-temperature failure.

- **Over temperature of the IGBT, possibly caused by a blocked fan or ventilation**
- **Solution. 1) Switch off the inverter and allow for cool down**
  2) Clean all ventilation
  3) Ensure fans are running correctly or properly ventilated

Product Warranty

STANDARD WARRANTY

Sunsynk series inverters come standard with a **manufacturer's warranty of 5 years.** The warranty period will commence from date of installation.

However, if the installation is made after more than six months from the date on which the product was dispatched by the Company, the warranty period will commence immediately after six months from the date of manufacture.

The warranty period cannot be extended.

Competitive Product Analysis

	Product A	Product B	Sunsynk 5kW	Product C	Product D	Sunsynk 8kW
Output Power	5kVA	4.6kVA	5kVA	6kVA	7.2kVA	8kVA
Charge Current	100A	100A	120A	100A	80A	190A
Parallel	No	No	Yes	No	Yes	Yes
Li-ion Battery	Yes (Brand Only)	Yes	Yes	Yes	Yes	Yes
Online Monitoring	Yes	Yes	Yes	Yes	Yes	Yes
Warranty	5	5.5 years Ext.	5 years	5 years Ext.	3 Years	5 Years

Local Support / RMA process

Local Support

SegenSolar provide the first line of support for Sunsynk enquiries. For any installation problems clients must call our team while on site with the equipment. This way our team can assist.

Sunsynk has a customer service center based in South Africa, ensuring cases that require manufacturer support get dealt with without delay.

RMA Process

In the event of a suspected faulty Sunsynk product, SegenSolar's technical team will ask the client to complete a short RMA form to gather the essential site info. Sunsynk will not handle claims from the consumer directly.

They will then arrange to test the products in the lab and quickly produce a report indicating the problem.

SegenSolar Packages, Quick Quote and Design Tools

Packages

SegenSolar makes it easy for you to purchase the right Sunsynk and Pylon components together by listing package(s). Snap up an additional discount for purchasing a complete system. Use Kit builder to create your package/Kit.

Quick Quote

Why bother spending time adding individual products to a basket when Quick Quote can create a range of complete system options for you in seconds. All complete, valid systems that have everything included that you need to get the job done.

Design Tools

For more detailed system design, SegenSolar's Design Tool lets you specify all your components from the start: modules, mounting kit with wind loading, MPPT matching and accessories. It's all there and you get a System Summary document for handy reference later.

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SegenSolar Packages, Quick Quote and Design Tools

Sunsynk Sun 5K Hybrid Inverter (Pack of 6)

Part No: SUN-5.0-6 Storage Systems - Large Bulk Pack

This is a bulk pack of 6 x Sunsynk Sun 5K Hybrid Inverter (SUN-5.0)

Other available sizes are:

Sunsynk Sun 5K Hybrid Inverter (Pack of 3)

Sunsynk Sun 8K Hybrid Inverter (Pack of 3)

Part No: SUN-8.0-3 Storage Systems - Bulk Pack

This is a bulk pack of 3 x Sunsynk Sun 8K Hybrid Inverter (SUN-8.0)

Other available sizes are:

Sunsynk Sun 8K Hybrid Inverter (Pack of 6)

Sunsynk Sun 5kW Hybrid / Pylon 14.21kWh Package

Part No: SUN-5.0-PYLON-14.21 Storage Systems - Grid Backup Packages

SPECIAL OFFER

This part is a special offer made up of the following items:

Part		Discount
4 x PYLON-US3000C	Pylon US3000C 3.5kWh Li-Ion Solar Battery (excl. brackets)	3%
1 x SUN-5.0	Sunsynk Sun 5K Hybrid Inverter	3%
1 x KETO-00	Fuse-switch-disconnector KETO size 00 body (battery isolator)	3%
1 x CAB-PK-PYLON	Cable Pack for US2000B / US3000 / Phantom-S Solar Batteries	3%
2 x N5014907-160A	NH Fuse-link 160A for KETO-00	3%
1 x BATCAB35-1M-RED	35mm2 Battery Cable (H01N2-D) 1m - Red	3%
1 x BATCAB35-1M	35mm2 Battery Cable (H01N2-D) 1m - Black	3%
4 x LUG35-8	35mm2 Cable Terminal Lug M8 - Single	3%

The Sunsynk hybrid Inverter is modern inverter for managing power flow from multiple sources such as solar, main electrical grid and generator. This Sunsynk inverter comes paired along with a Pylontech 14.21kWh battery package, a complete storage solution providing grid-backup for loads up to 5kW.

SUN SYNK®
No Power No Problem

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Thank you!

Create your Sunsynk Package now with Kit Builder!