

Sungrow Single-Phase Hybrid in Off-Grid: Additional settings for Generator V1.0

Disclaimer

The material in this document has been prepared by Sungrow Australia Group Pty. Ltd. ABN 76 168 258 679 and is intended as a guideline to assist solar installers for troubleshooting. It is not a statement or advice on any of the Electrical or Solar Industry standards or guidelines. Please observe all OH&S regulations when working on Sungrow equipment.

Applicability:

SH5.0RS, SH6.0RS SH8.0RS, SH10RS

The above Hybrid Inverters can be connected to a backup Generator providing:

- The most recent firmware for dongle Inverter and battery is installed.
- There is enough generator capacity to supply loads and charge the battery.
- Generator is 2-wire auto-start type.
- The designer is responsible for generator selection and system design.

Installation:

Install exactly as you would for grid connect, *except*:

- Generator output connected to AC port.
- Energy meter not required.
- Additional settings (shown below)

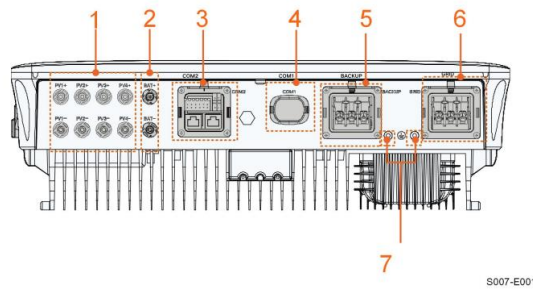
Important! Please refer to the Owner's Manual for full technical and connection details for basic installation.

Inverter connections:

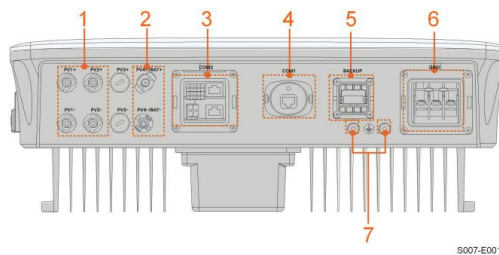
Terminal 5 = Backup port

Terminal 6 = Generator port

Terminal 7 = Chassis Earth point



Picture 1 - SH8.0/10RS connections

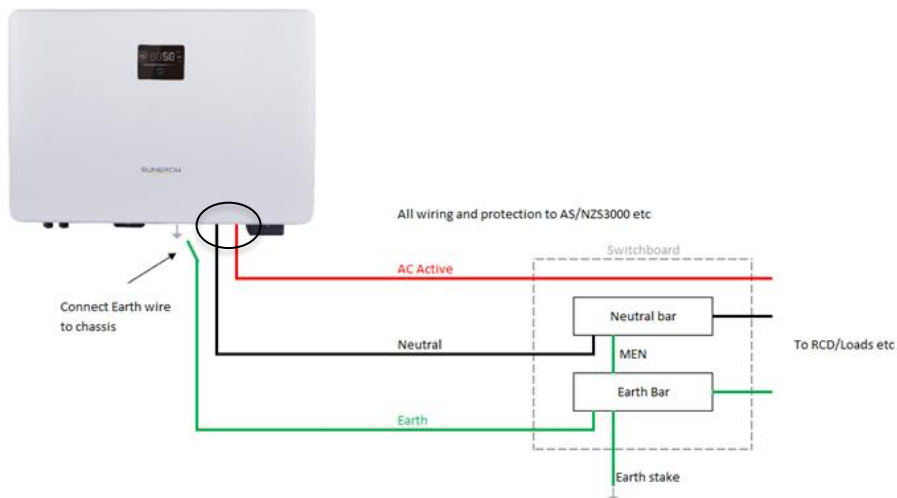


Picture 2 - SH5.0/6.0RS connections

AC house loads wiring to backup port:

The Backup wiring must be done in accordance with AS/NZS3000 etc. Ensure correct Earthing and cable protection etc.

Connect house loads wiring to the backup port, ensure that the earth wire is connected between chassis and earth bar. Do not connect PE at the backup port.



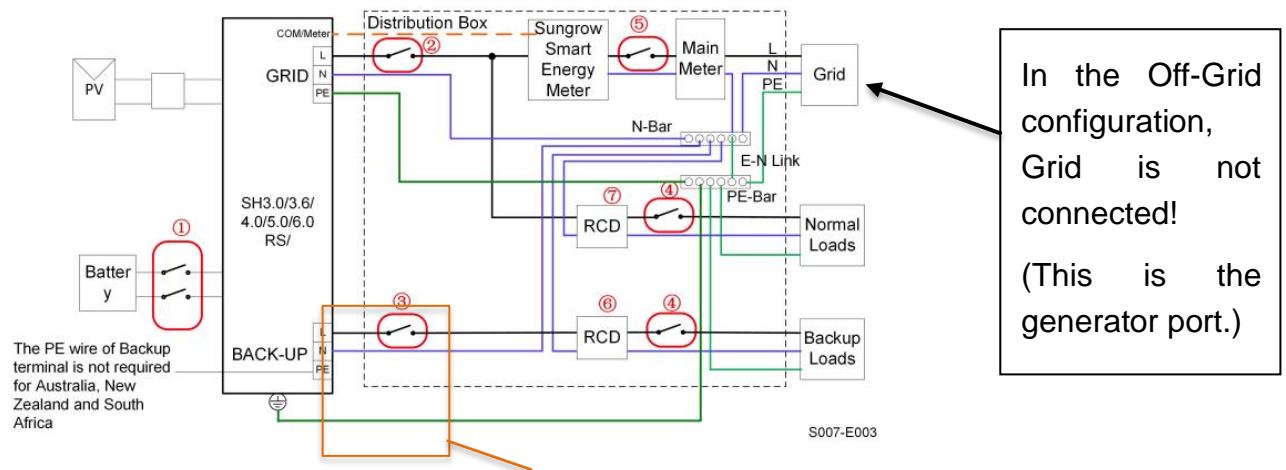
Picture 3 – Backup termination and chassis earth

Earthing chassis requirement (From the install manual):

Ensure that the chassis is earthed back to the earth bar/MEN in the switchboard as per the install manual. Use correct earth cable size (AS/NZS3000).

For AU/NZ/SA

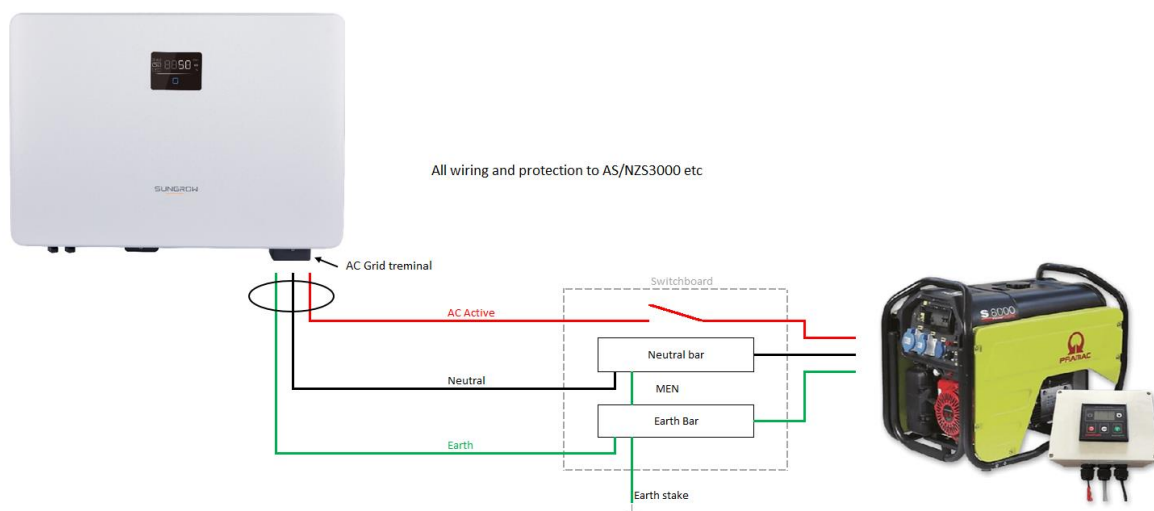
For Australia, New Zealand and South Africa, the neutral cable of GRID side and BACK-UP side must be connected together. Otherwise BACK-UP function will not work.



Picture 4 - Chassis earth (picture from user manual).

Generator AC connection:

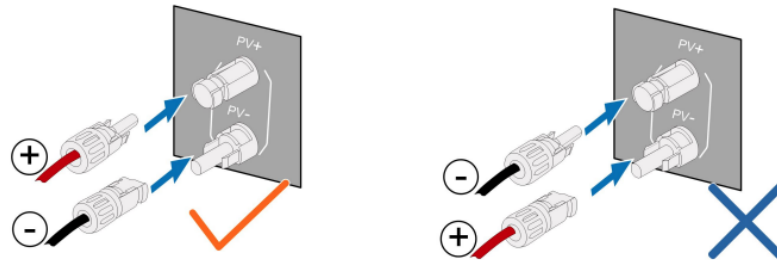
Connect the AC output of the generator to the grid AC terminal of the inverter (Consult generator manual for details) ensuring the earth is connected to the MEN.



Picture 5 – Generator AC connection

PV DC:

Connect the PV array ensuring that the voltage and current ratings are not exceeded.
Use the supplied genuine MC4 connectors.

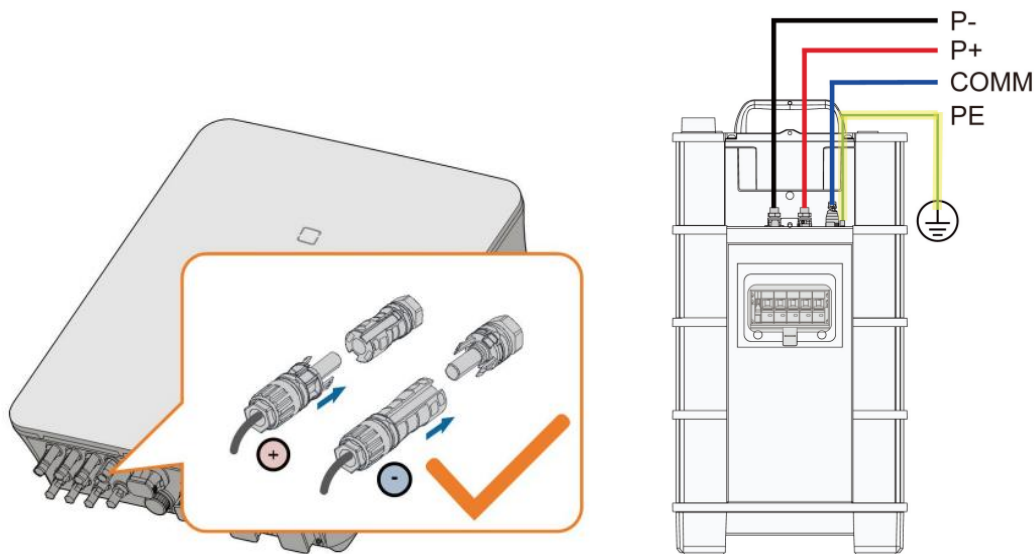


Picture 6 – PV DC connections

Battery:

Connect the battery (Maximum 6 modules in a stack) including the Power DC, CAN, and earth.

Ensure to use the correct Evo2 connectors at inverter connection.

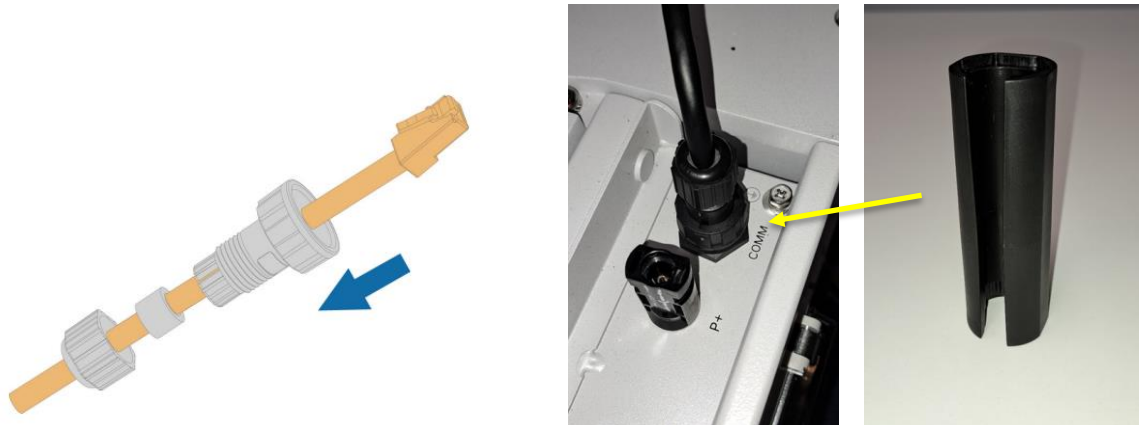


Picture 7 – Battery connections

COM cables:

Assemble the CAN cable and plug into the control box of the battery, using the supplied tool to securely lock the RJ45 plug.

No energy meter required.



Picture 8 – CAN connector. Use the tool to lock the locking.

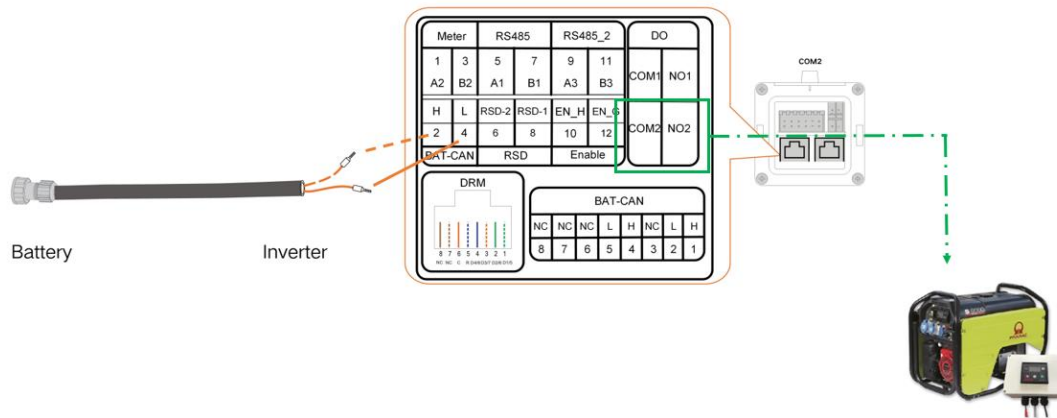
Ensure to properly terminate the Com cables using the supplied blue bootlace ferrules.



Picture 9 – The correct bootlace crimps

Connect the battery CAN to the CANH and CANL of the COM plug and Connect the Generator auto-start to the DO using a 2-conductor circular control wire.

(Communication pinout diagrams may vary between models. All inverters have a pinout map on the left-hand side of the inverter.)



Picture 10 - Battery CAN and DO generator auto-start wiring.

Commissioning:

Please use the same commissioning sequence as you would for a Grid-Connected system (to enable firmware updates).

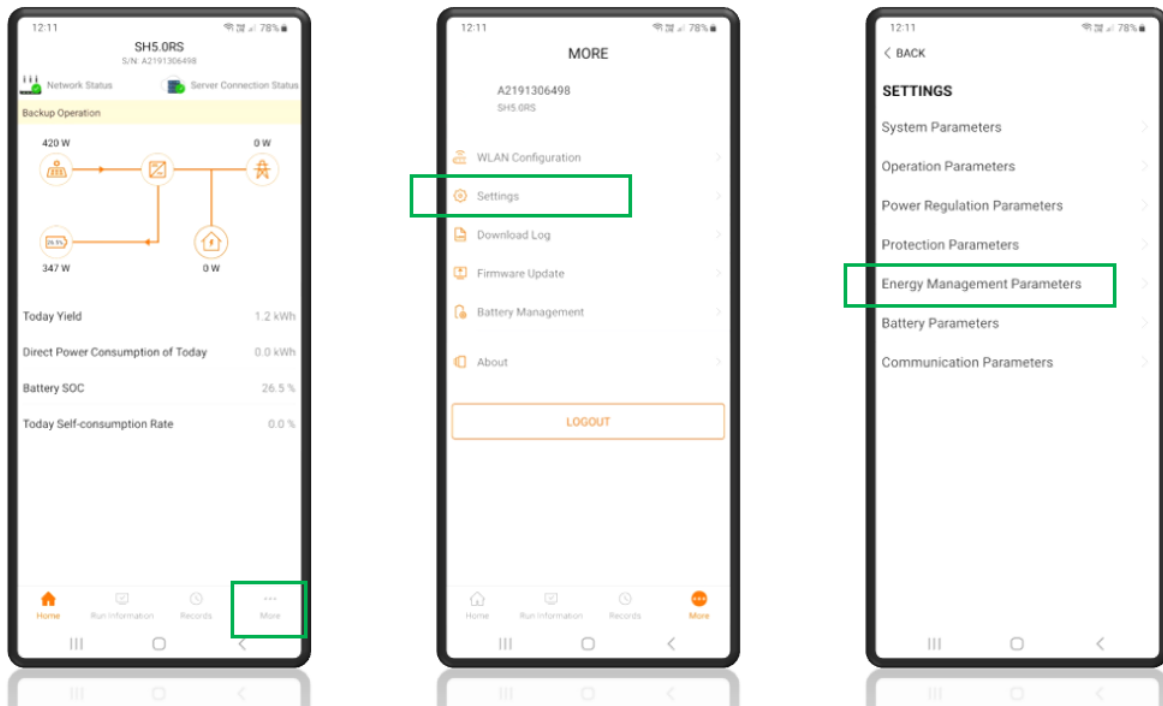
<https://www.youtube.com/watch?v=L4rkQvhk6zw>

Power the system up with just PV and battery (*the inverter may show a 010 error initially, then go into backup mode*) and update all the firmware (Dongle, Hybrid Inverter and Battery)

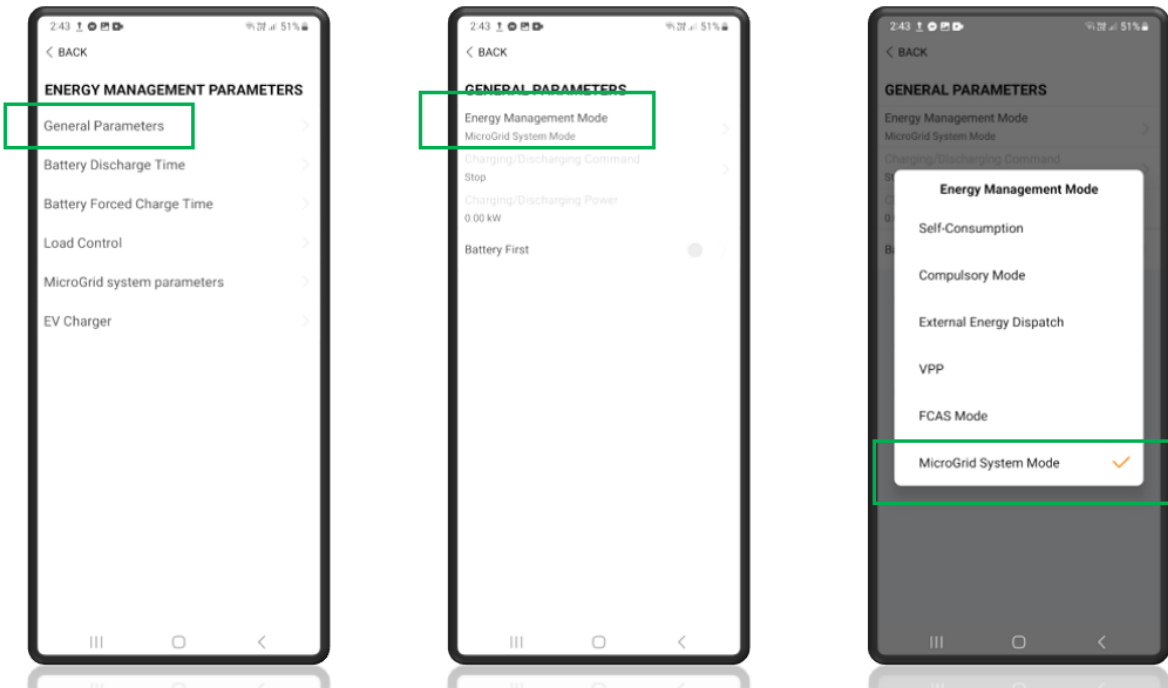
Off-Grid Settings:

Log in via 'Local Access'

Go to 'Settings' > 'Energy Management Parameters' > 'General Parameters' > 'Energy Management Mode' and enable '**MicroGrid System Mode**'



Picture 11 - Settings



Picture 12 – Settings (Continued)

Set the generator to auto-start or manual start:

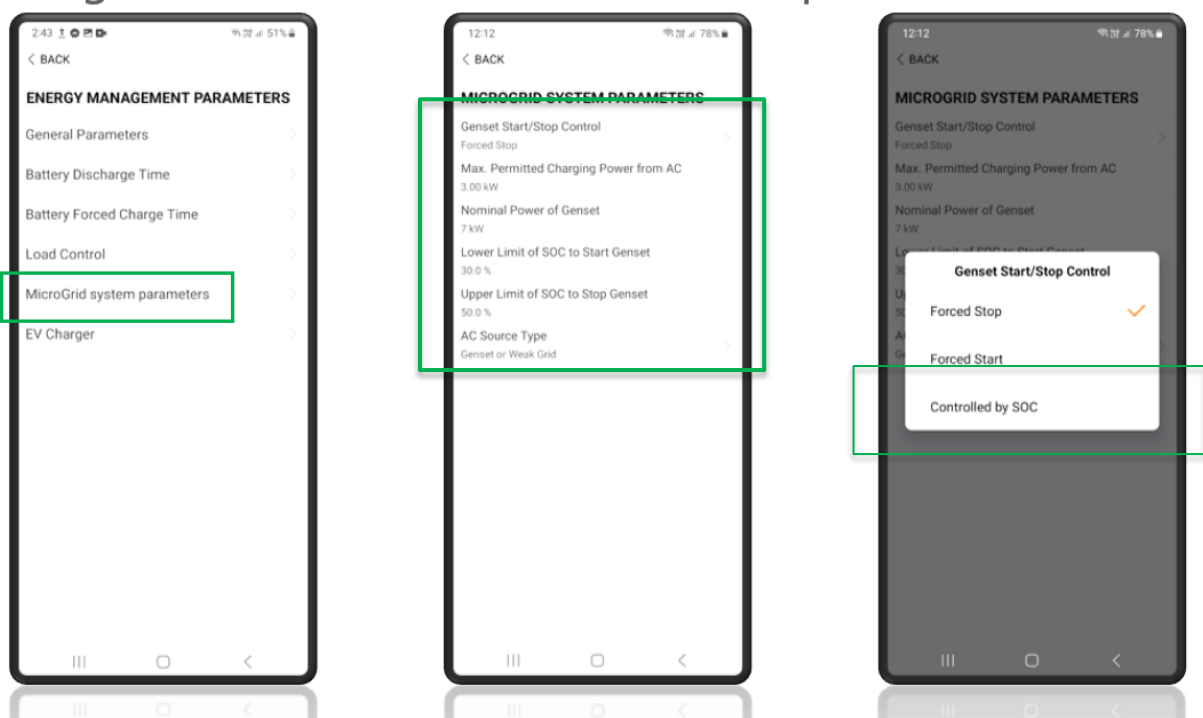
The generator can be set to either start/stop depending on battery SOC%, or manual start/stop. The 2-wire control cable must be connected for this function.

Go back to 'Energy Management Parameters' and select 'MicroGrid System Parameters'

Set the 'Nominal power of Genset' and the 'Maximum Permitted Charging Power from AC' to suit the installation.

If using the SOC% method of generator control, set the lower and upper SOC%.

Or, the generator can be started and stopped manually via the 'Forced Start' and 'Forced Stop' function in the App.



Picture 14 - Setting the start/stop instruction commands

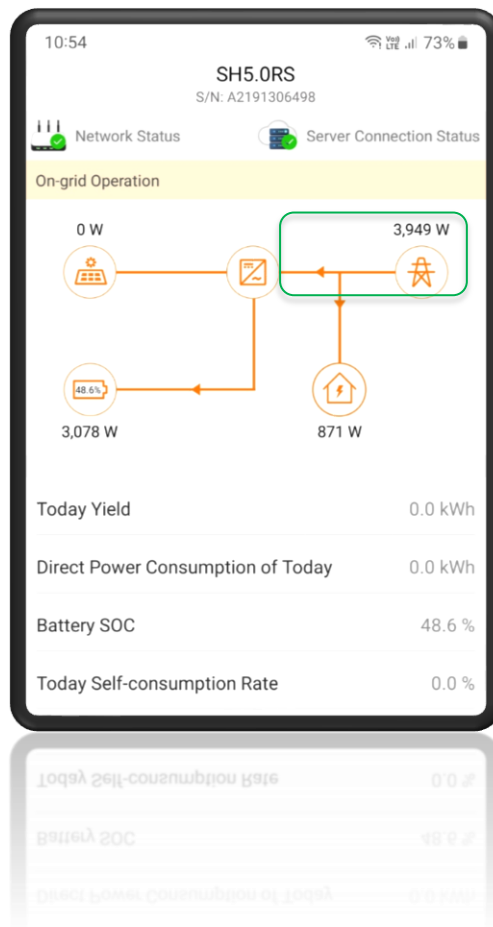
Step 4: Testing the generator operation:

Once all the settings are complete, set the generator to auto-start in accordance with the generator instructions.

Switch off the PV.

Ensure the battery is not 100% (or discharge to the low SOC% setting)

Start the generator and observe the system supplying loads and charging battery.



Picture 15 – Genset supplying loads and charging battery



Picture 16 – The LED display

If using the 'Forced Start' method, select 'Forced Stop' to shut generator down.

If the issue still persists, please take photos testing on site and contact Sungrow Service Department on 1800 786 476 or email to service@sungrowpower.com.au.