



## Hybrid Parity (Super) Inverter



# DATASHEET

3.6kW/5.5kW/8.8kW PLUS PARALLEL VERSION

SUNSYNK-8K-SG01LP1 SUNSYNK-5K-SG03LP1 SUNSYNK-8K-SG02LP1 SUNSYNK-7.6K-SG02LP1  
SUNSYNK-6K-SG02LP1 SUNSYNK-5K-SG02LP1 SUNSYNK-3.6K-SG02LP1

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## Australian Manual

**No country code is required since the unit is preset to the Australian standards**

This inverter complies with IEC 62109-2 clause 13.9 for earth fault alarm monitoring. If an Earth Fault Alarm occurs, the fault code F24 will be displayed on the inverter screen /the LED indicator fault will light up.

**All these models fall into two cabinet / PCB types 5.5kW (Small) and 8.8kW (Large):**

### **5kW Type:**

SUNSYNK-5K-SG02LP1  
SUNSYNK-3.6K-SG02LP1  
SUNSYNK-6K-SG02LP1  
SUNSYNK-5K-SG03LP1

### **8.8 kW Type**

SUNSYNK-8K-SG01LP1  
SUNSYNK-8K-SG02LP1  
SUNSYNK-7.6K-SG02LP1



**3.6kW / 5.5kW**



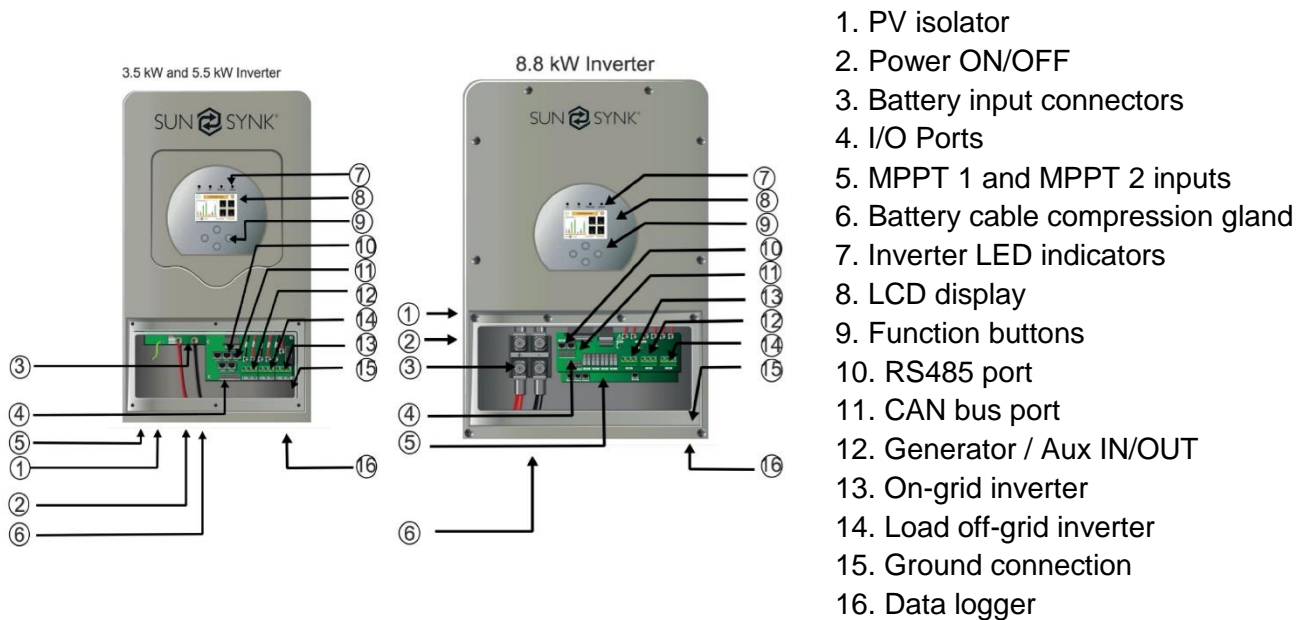
**8.8kW**

# Index

|   |           |
|---|-----------|
| <b><u>1. SYSTEM OVERVIEW</u></b> .....                        | <b>4</b>  |
| <b><u>2. TECHNICAL SPECIFICATION</u></b> .....                | <b>6</b>  |
| <b>2.1. SYSTEM DIAGRAM</b> .....                              | <b>8</b>  |
| <b><u>3. OPERATION</u></b> .....                              | <b>9</b>  |
| <b>3.1. HOME PAGE</b> .....                                   | <b>9</b>  |
| <b>3.2. STATUS PAGE</b> .....                                 | <b>10</b> |
| <b>3.3. SYSTEM FLOW PAGE</b> .....                            | <b>11</b> |
| <b>3.4. ADVANCED SETTINGS FOR PARALLELING INVERTERS</b> ..... | <b>12</b> |
| <b>3.5. SOLAR POWER GENERATED</b> .....                       | <b>13</b> |
| <b>3.6. GRID POWER</b> .....                                  | <b>14</b> |

## 1. SYSTEM OVERVIEW

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The Sunsynk Hybrid Parity Inverter is a highly efficient power management tool that allows the user to hit those 'parity' targets by managing power flow from multiple sources such as solar, main electrical grids, and generator, and then effectively storing and releasing electric power as the utilities require.

### INTERACTIVE

- Easy and simple to understand display
- Supporting Wi-Fi or GSM monitoring
- Visual power flow screen
- Built-in 2 strings of MPP trackers
- Smart settable 3-stage MPPT charging for optimized battery performance
- Auxiliary load function
- Parallel / multi invert function grid-tied and off-grid

### COMPATIBLE

- Compatible with main electrical grid voltages or power generators
- Compatible with wind turbines
- 220V single phase, pure sinewave inverter
- Self-consumption and feed-in to the grid
- Auto restart while AC is recovering
- Auto earth bond feature (Via a relay)

### CONFIGURABLE

- Fully programmable controller

- Programmable supply priority for battery or grid
- Programmable multiple operation modes: on-grid/off-grid & UPS
- Configurable battery charging - current/voltage based on applications by LCD setting
- Configurable AC / solar / generator charger priority by LCD setting

## **SECURE**

- Overload/over-temperature/short-circuit protection
- Smart battery charger design for optimized battery protection
- Limiting function installed to prevent excess power overflow to grid

## **APPLICATIONS**

- Marine (vessel power management)
- Power shedding (home/office/factory)
- UPS (fuel-saving systems)
- Remote locations with solar and wind generators
- Building sites
- Military locations
- Telecommunication

## 2. TECHNICAL SPECIFICATION

### ■ SUNSYNK-3.6K-SG02LP1 and SUNSYNK-5K-SG03LP1

| Model                                       | SUNSYNK-3.6K-SG02LP1   | SUNSYNK-5K-SG03LP1 |
|---|--|--------------------|
| <b>Battery Input Data</b>                   |  |                    |
| Battery Type                                | Lead-acid or Lithium-ion   |                    |
| Battery Voltage Range (V)                   | 40~60V   |                    |
| Max. Charging Current (A)                   | 90A  | 120A               |
| Max. Discharging Current (A)                | 90A  | 120A               |
| Charging Curve                              | 3 Stages/Equalisation  |                    |
| External Temperature Sensor                 | Optional   |                    |
| Charging Strategy for Li-Ion Battery        | Self-Adaptation to BMS   |                    |
| <b>PV String Input Data</b>                 |  |                    |
| Max. DC Input Power (W)                     | 4680W  | 6500W              |
| PV Input Voltage (V)                        | 370V (100V~500V)   |                    |
| MPPT Range (V)                              | 125~425V   |                    |
| Full Load DC Voltage Range (V)              | 240~425V   |                    |
| Start-up Voltage (V)                        | 150V   |                    |
| PV Input Current (A)                        | 11A+11A  |                    |
| No. of MPPT Trackers                        | 2  |                    |
| No. of Strings Per MPPT Tracker             | 1+1  |                    |
| <b>AC Output Data</b>                       |  |                    |
| Rated AC Output and UPS Power (W)           | 3600W  | 5000W              |
| Max. AC Power (W)                           | 3960W  | 5500W              |
| Peak Power (off-grid)                       | 2 times of rated power, 10 S   |                    |
| AC Output Rated Current (A)                 | 15.7A  | 21.7A              |
| Max AC Output Current (A)                   | 18A  | 25A                |
| Max Continuous AC Passthrough (A)           | 35A  |                    |
| Power Factor                                | 0.8 leading to 0.8 lagging   |                    |
| Output Frequency and Voltage                | 50/60Hz; 220/230/240Vac (single phase)   |                    |
| Grid Type                                   | Single Phase   |                    |
| Current Harmonic Distortion                 | THD<3%(Linear load<1.5%)   |                    |
| <b>Efficiency</b>                           |  |                    |
| Max. Efficiency                             | 97.60%   |                    |
| MPPT Efficiency                             | 96.50%   |                    |
| Euro Efficiency                             | 99.90%   |                    |
| <b>Protection</b>                           |  |                    |
| PV Input Lightning Protection               | Integrated   |                    |
| Anti-islanding Protection                   | Integrated   |                    |
| PV String Input Reverse Polarity Protection | Integrated   |                    |
| Insulation Resistor Detection               | Integrated   |                    |
| Residual Current Monitoring Unit            | Integrated   |                    |
| Output Over Current Protection              | Integrated   |                    |
| Output Shorted Protection                   | Integrated   |                    |
| Output Over Voltage Protection              | Integrated   |                    |
| <b>Certifications and Standards</b>         |  |                    |
| Grid Regulation                             | VDE 0126, AS4777, NRS2017, G98, G99, IEC61683, IEC62116, IEC61727, RD1699:2011, XP C15-712-3:2019-05 |                    |
| Safety Regulation                           | IEC62109-1, IEC62109-2   |                    |
| EMC   | EN61000-6-1, EN61000-6-3   |                    |
| <b>General Data</b>                         |  |                    |
| Operating Temperature Range (°C)            | -25~60°C, >45°C Derating   |                    |
| Cooling                                     | Fan  |                    |
| Noise (dB)                                  | <30  |                    |

|                                |                    |
|--------------------------------|--------------------|
| Communication with BMS         | RS485; CAN         |
| Weight (kg)                    | 20.5               |
| Size (Length x Width x Height) | 580 x 330 x 208 mm |
| Protection Degree              | IP65               |
| Installation Style             | Wall-mounted       |
| Warranty                       | 5 years            |
| Maximum Altitude               | 4000 m             |

■ **SUNSYNK-5K-SG02LP1, SUNSYNK-6K-SG02LP1, SUNSYNK-7.6K-SG02LP1, SUNSYNK-8K-SG01LP1, and SUNSYNK-8K-SG02LP1**

| Model                                       | SUNSYNK-5K-SG02LP1  | SUNSYNK-6K-SG02LP1 | SUNSYNK-7.6K-SG02LP1 | SUNSYNK-8K-SG01LP1/<br>SUNSYNK-8K-SG02LP1 |
|---|---|--------------------|----------------------|---|
| <b>Battery Input Data</b>                   |   |                    |                      |   |
| Battery Type                                | Lead-acid or Lithium-ion  |                    |                      |   |
| Battery Voltage Range (V)                   | 40~60V  |                    |                      |   |
| Max. Charging Current (A)                   | 120A  | 135A               | 190A                 | 190A                                      |
| Max. Discharging Current (A)                | 120A  | 135A               | 190A                 | 190A                                      |
| Charging Curve                              | 3 Stages/Equalisation   |                    |                      |   |
| External Temperature Sensor                 | Optional  |                    |                      |   |
| Charging Strategy for Li-Ion Battery        | Self-Adaptation to BMS  |                    |                      |   |
| <b>PV String Input Data</b>                 |   |                    |                      |   |
| Max. DC Input Power (W)                     | 6500W   | 7800W              | 9880W                | 10400W                                    |
| PV Input Voltage (V)                        | 370V (100V~500V)  |                    |                      |   |
| MPPT Range (V)                              | 125~425V  |                    |                      |   |
| Start-up Voltage (V)                        | 150V  |                    |                      |   |
| PV Input Current (A)                        | 11A+11A   | 18A+9A             | 18A+18A              | 18A+18A                                   |
| No. of MPPT Trackers                        | 2   |                    |                      |   |
| No. of Strings Per MPPT Tracker             | 1+1   | 2+1                | 2+2                  | 2+2                                       |
| <b>AC Output Data</b>                       |   |                    |                      |   |
| Rated AC Output and UPS Power (W)           | 5000W   | 6000W              | 7600W                | 8000W                                     |
| Max. AC Power (W)                           | 5500W   | 6600W              | 8360W                | 8800W                                     |
| Peak Power (off-grid)                       | 2 times of rated power, 10 S  |                    |                      |   |
| AC Output Rated Current (A)                 | 20.8A   | 25A                | 31.7A/33A            | 33.4A/35A                                 |
| Max AC Output Current (A)                   | 24A   | 28.8A              | 36.4A/38A            | 38.3A/40A                                 |
| Max Continuous AC Passthrough (A)           | 48A   | 80A                | 90A                  | 90A                                       |
| Output Frequency and Voltage                | 50/60Hz; 120/240Vac(split phase), 208Vac(2/3), 230Vac(single phase) |                    |                      |   |
| Grid Type                                   | Split phase, 2/3 phase, Single phase                                |                    |                      |   |
| Current Harmonic Distortion                 | THD<3%(Linear load<1.5%)  |                    |                      |   |
| <b>Efficiency</b>                           |   |                    |                      |   |
| Max. Efficiency                             | 97.60%  |                    |                      |   |
| MPPT Efficiency                             | 96.50%  |                    |                      |   |
| Euro Efficiency                             | 99.90%  |                    |                      |   |
| <b>Protection</b>                           |   |                    |                      |   |
| PV Arc Fault Detection                      | Integrated (Except European Type)                                   |                    |                      |   |
| PV Input Lightning Protection               | Integrated  |                    |                      |   |
| Anti-islanding Protection                   | Integrated  |                    |                      |   |
| PV String Input Reverse Polarity Protection | Integrated  |                    |                      |   |
| Insulation Resistor Detection               | Integrated  |                    |                      |   |
| Residual Current Monitoring Unit            | Integrated  |                    |                      |   |
| Output Over Current Protection              | Integrated  |                    |                      |   |
| Output Shorted Protection                   | Integrated  |                    |                      |   |

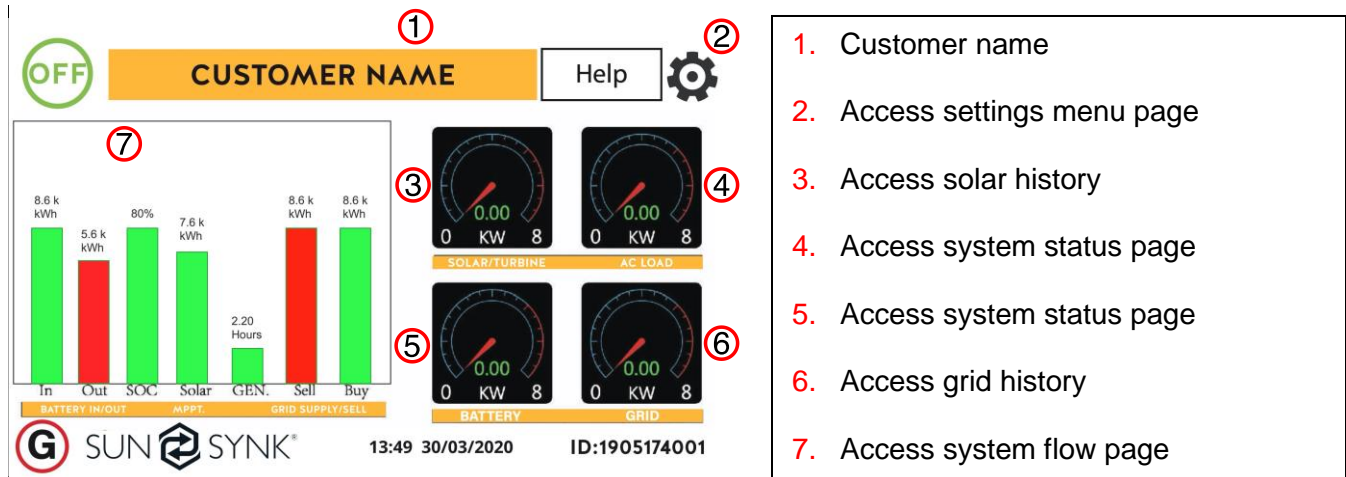




### 3. OPERATION

#### 3.1. Home Page

Press Esc button any page to access the home page:



Daily readings

Real time readings

#### What this page displays:

- Total daily power into the battery (kWh).
- Total daily power out of the battery (kWh).
- SOC (State of charge of the battery) (%).
- Total daily solar power produced in (kWh).
- Total hourly usage of the generator (Time).
- Total daily power sold to the grid (kWh).
- Total daily power bought from the grid (kWh).
- Real-time solar power in (kW).
- Real-time load power in (kW).
- Real-time battery charge power in (kW).
- Real-time grid power in (kW).
- Serial number.
- Time date.
- Fault condition.
- Access stats pages.
- Access status page.
- Access fault diagnostic page.

### 3.2. Status Page

To access the Status page, click on the “Battery” or “AC Load” dial on the Home page.

#### What this page displays:

- Total solar power produced.
- MPPT 1 power/voltage/current.
- MPPT 2 power/voltage/current.
- Grid power.
- Grid frequency.
- Grid voltage.
- Grid current.
- Inverter power.
- Inverter frequency.
- Inverter voltage.
- Inverter current.
- Load power.
- Load voltage.
- Battery power charge/discharge.
- Battery SOC.
- Battery voltage.
- Battery current.
- Battery temperature.

|  |   |                                   |
|--|---|-----------------------------------|
| 0 Watts<br><br>0.00 V<br>0.00 Amps<br>0.0 C                        | 0 watts<br>0 Hz<br>0 Volts<br>0.0 Amps<br>CT:0Watts<br>LD: 0Watts | 0 Watts<br>0.00 Volts<br>0.0 Amps |
| Battery  | Grid Power  | Solar Power 1                     |
| 0 watts<br>0 Hz<br>0 Volts<br>0.0 Amps<br>DC:100.0 C<br>AC:100.0 C | 0 Watts<br>0.00 Volts<br>0.0 Amps                                 | 0 Watts<br>0.00 Volts<br>0.0 Amps |
| Inverter Power   | Load Power  | Solar Power 2                     |

**Solar Column:** Shows total PV power at the top and then details of each of the two MPPT’s below L1 & L2 voltage.

**Grid Column:** Shows grid total power, frequency, voltage, and current. When selling to grid the power is negative. When receiving from the grid the power is positive. If the sign of the grid and HM powers are not the same when the PV is disconnected and the inverter is only taking energy from the grid and using the HM CT connected to Limit-2 then please reverse the polarity of the HM current sensor. **Important:** See section on CT coil.

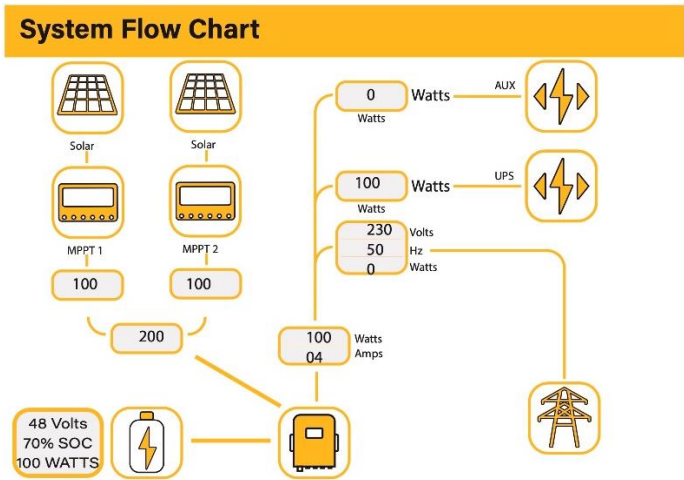
**Inverter Column:** Showing inverter total power, frequency, L1, L2, voltage, current, and power.

**Load Column:** Showing total load power, load voltage, and power on L1 and L2.

**Battery Column:** Showing total power from the battery, battery SOC, battery voltage, battery current (negative means charge, positive means discharge) battery temperature (shows zero if the battery temperature sensor is not connected). DC transformer temperature and AC heatsink temperature (When the temperature reaches 90°C it will show in red and start deteriorating when it reaches 110°C. Next, the inverter will shut down to allow it to cool and reduce its temperature.

### 3.3. System Flow Page

Access by clicking on the “Bar Chart ” on the home page

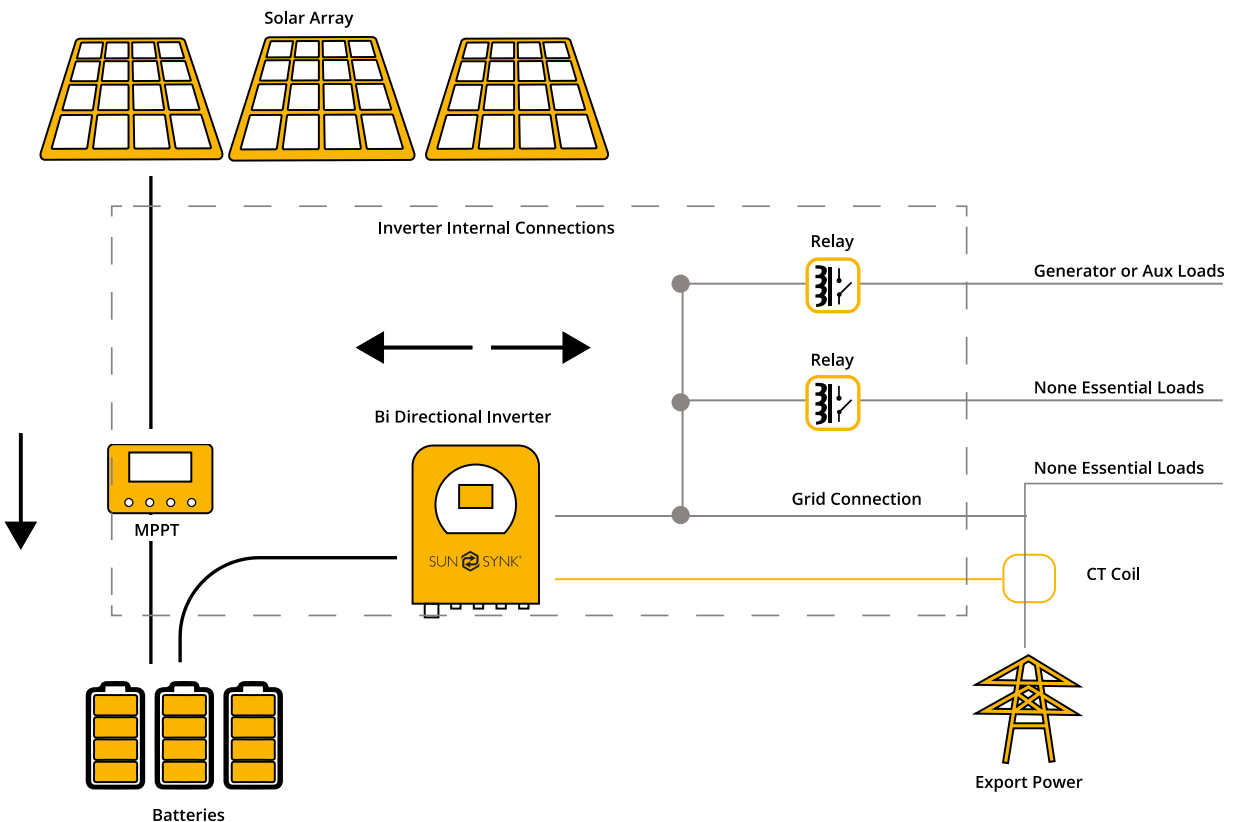


#### What this page displays:

- The system flow.
- MPPTs power.
- Battery status.
- Power distribution to load or grid.

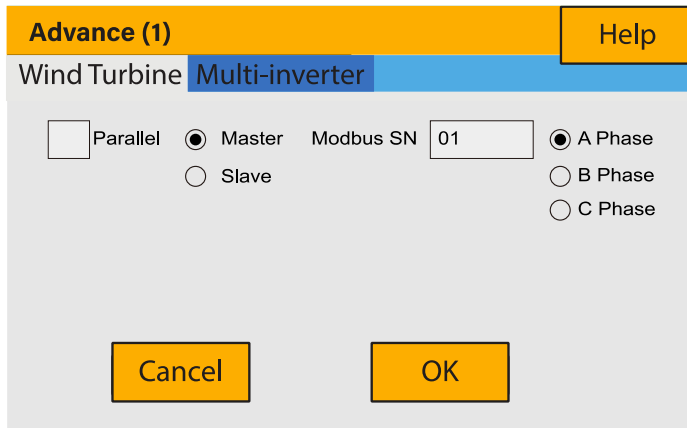
To better understand the functioning of your system, take a look at the figure bellow:

1. The PV modules charge the batteries.
2. When the batteries reach a specific level (programmable) the battery power is fed into the inverter.
3. The inverter can then supply power to the grid (export or no export), load, and auxiliary or smart load.
4. CT coil controls the export power.



### 3.4. Advanced Settings for Paralleling Inverters

To configure multi-inverter settings click on the “Advance” icon.



#### What this page displays:

- If the inverter operates as a master or a slave.
- Modbus Device ID, which must be unique for each inverter connected to the bus/wire.

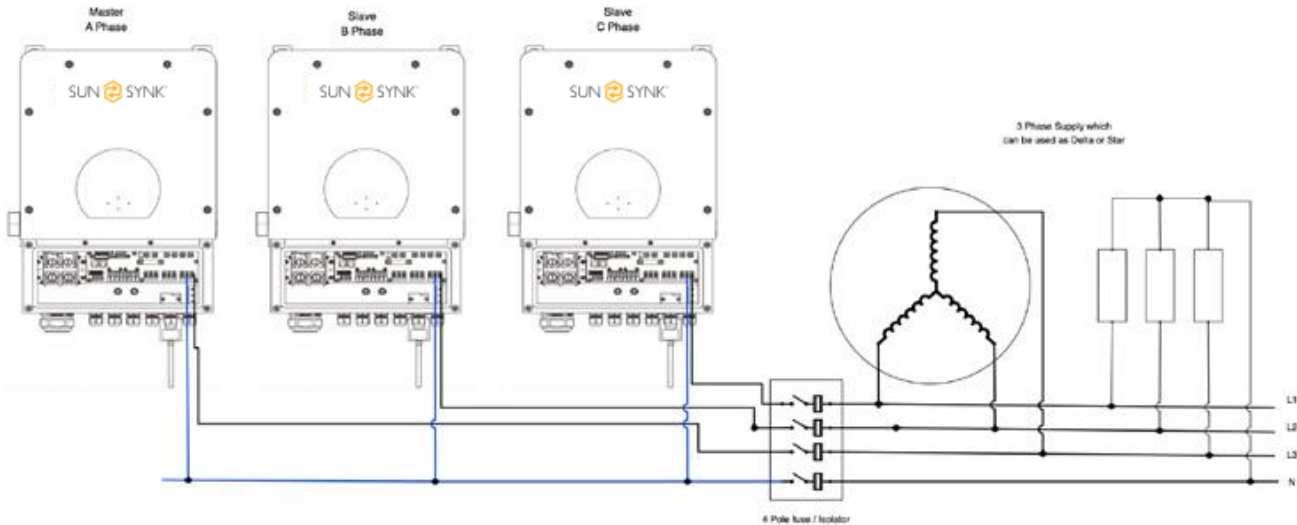
#### What you can do from this page:

- Set the inverter as a master or slave per bus/wire.
- Set the phase in which the inverter will be paralleled.
- Set the Modbus SN for paralleling.

The Sunsynk parity inverter can be wired standalone or where more power is required it can be connected in parallel either single or 3 phase configuration. The maximum number of inverters that can be paralleled in a single phase utility grid is three (10.8kW, 16.5kW, and 26.4kW for the 3.6kW, 5.5kW, and 8.8 kW model, respectively) and the maximum number that can be paralleled in a three phase utility grid is nine (32.4kW, 49.5kW, and 79.2kW for the 3.6kW, 5.5kW, and 8.8 kW model, respectively).

To parallel six inverters in a three phase utility grid is necessary to set three inverters as master and three as slaves:

- Phase A: Master A and Slave A
- Phase B: Master B and Slave B
- Phase C: Master C and Slave C

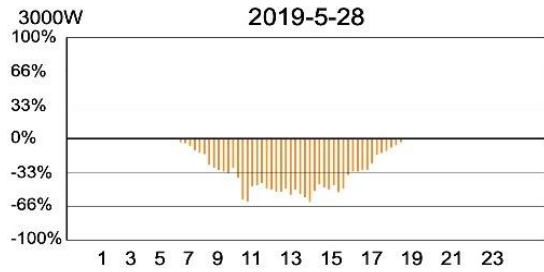




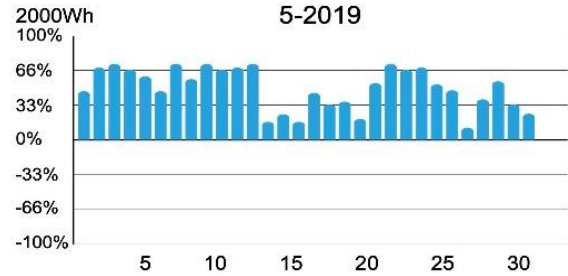
### 3.6. Grid Power

This page shows the daily, monthly, yearly, and total grid power export or consumed. Access this page by clicking on the “Solar/Turbine” icon on the home page.

| Return | Day | Month | Year | Total |
|--------|-----|-------|------|-------|
|--------|-----|-------|------|-------|



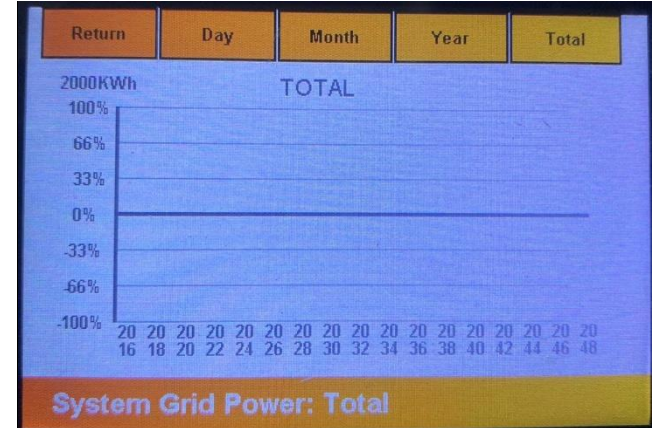
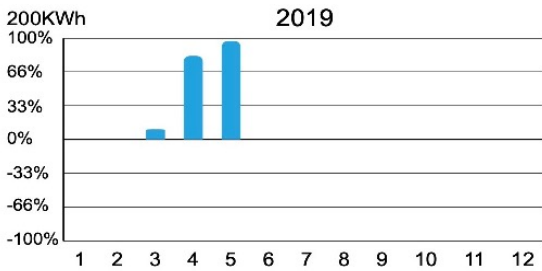
| Return | Day | Month | Year | Total |
|--------|-----|-------|------|-------|
|--------|-----|-------|------|-------|



**Grid Power Import / Export :- Day**

**Grid Power Import / Export :- Month**

| Return | Day | Month | Year | Total |
|--------|-----|-------|------|-------|
|--------|-----|-------|------|-------|



**Grid Power Import / Export :- Year**

**System Grid Power: Total**



**Australia Main Dealer**

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