



No Power
No Problem

4

System
Versatility

SUN  SYNK®

REVOLUTIONISING THE WAY WE USE, STORE, GENERATE & CONTROL ENERGY



www.sunsynk.com

System Versatility

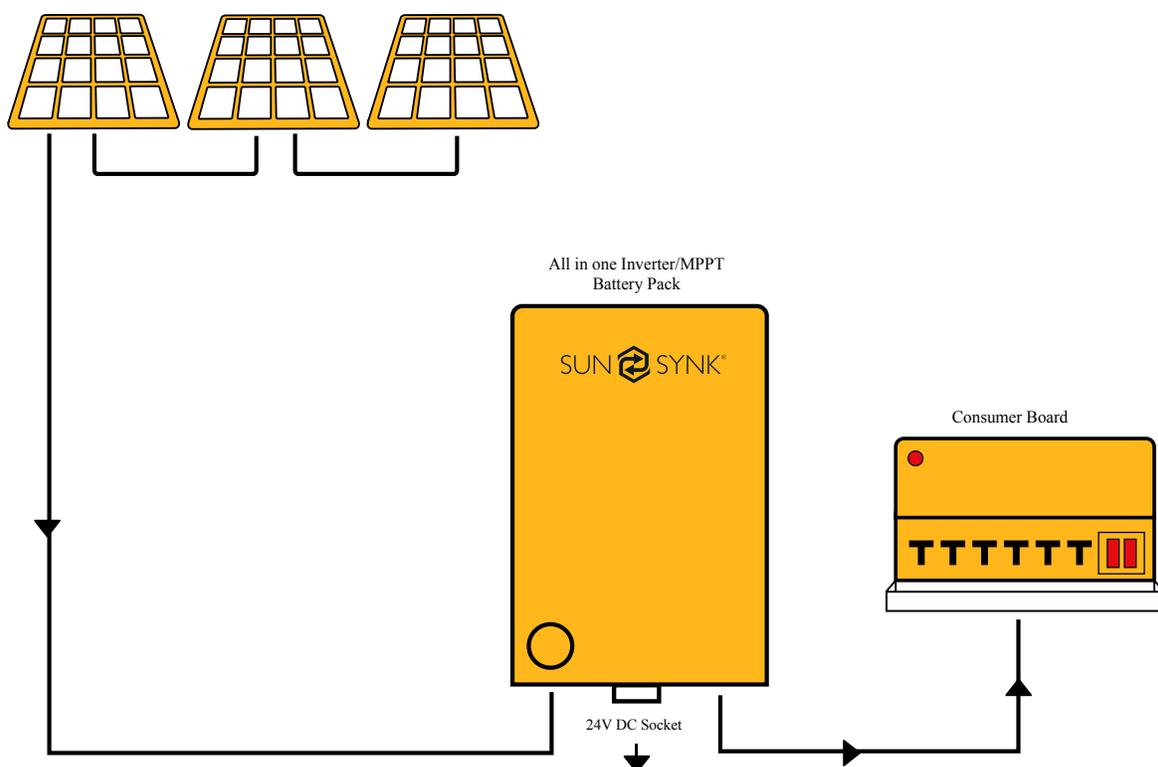
Sunsynk systems have been designed to be versatile. All the various components that make up a Sunsynk system are compatible with other parts across the Sunsynk range. That means installation is that much easier and stock moves faster as various elements can match the differing configurations. The Sunsynk System has many options and an installer can set up both simple off-grid systems and large scale arrays generating a high wattage. A major benefit of our range is that the products are easy to use and can be united in an efficient all-in-one system.

Power Bank System

The below diagram demonstrates a power bank system connected to a small solar array which is ten connected to the grid. This is an 'entry-level' system that provides power at a low cost with simple installation. It is perfect for garden sheds, garden bars, remote buildings and small houses.

The system consists of the following components;

- 1) Solar array;
- 2) Power Bank with lithium-ion batteries and an all-in-one inverter;
- 3) Consumer unit.



System Versatility

Micro-Inverter System

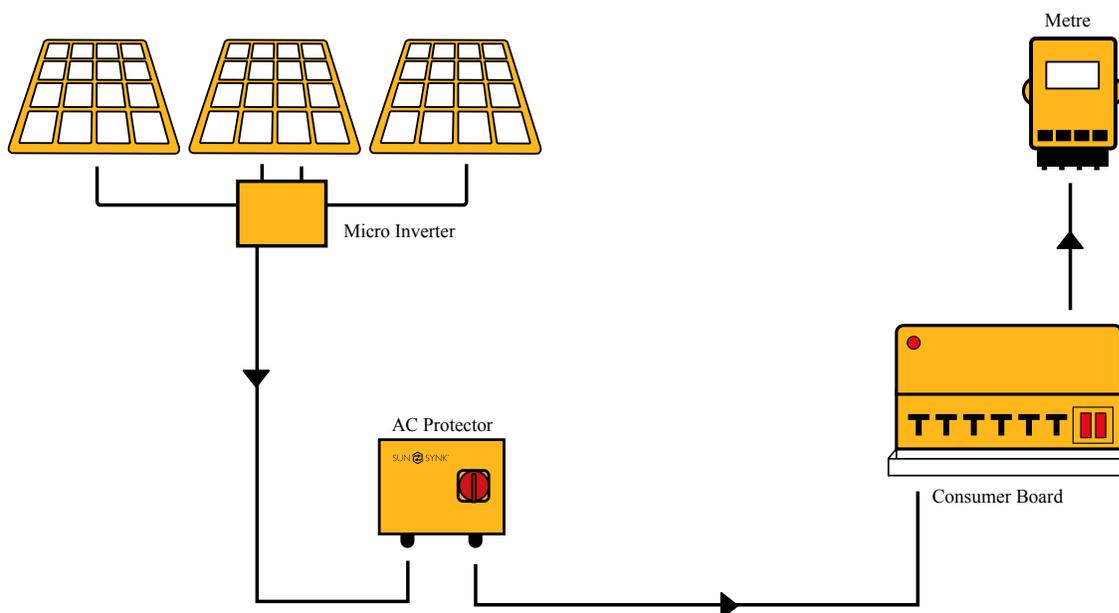
The diagram below shows the simplest configuration for an On-Grid / Grid-Tied System utilising a micro-inverter system. This is an entry-level system for low-power applications, in which you have the option to export power to the grid. Micro-inverters ensure peak performance from the array as each module is connected via a built-in port that has a Maximum Power Point Tracking (MPPT) feature. Therefore, if one panel is affected by shade, dust, orientation, or any situation in which it underperforms other panels, this problem will not impact the rest of the array.

An important point regarding safety is that micro-inverters panels once installed in array; the highest voltage on the roof is the voltage of one panel. On the other hand, string-tied inverters have a large number of panels interconnected therefore their DC voltage is high and the risk to the user is higher, especially in the event of a fire.

In addition, micro-inverters do not require long DC strings and have a typical output of 220VAC and are convenient to install.

The micro-inverter system is comprised of the following parts:

- 1) The solar array where each module (panel) is connected to an MPPT port installed in the micro-inverter.
- 2) A multi-channel Sunsynk Micro-Inverter
- 3) Power isolator and protection circuit
- 4) Consumer unit connected with or without a CT coil.



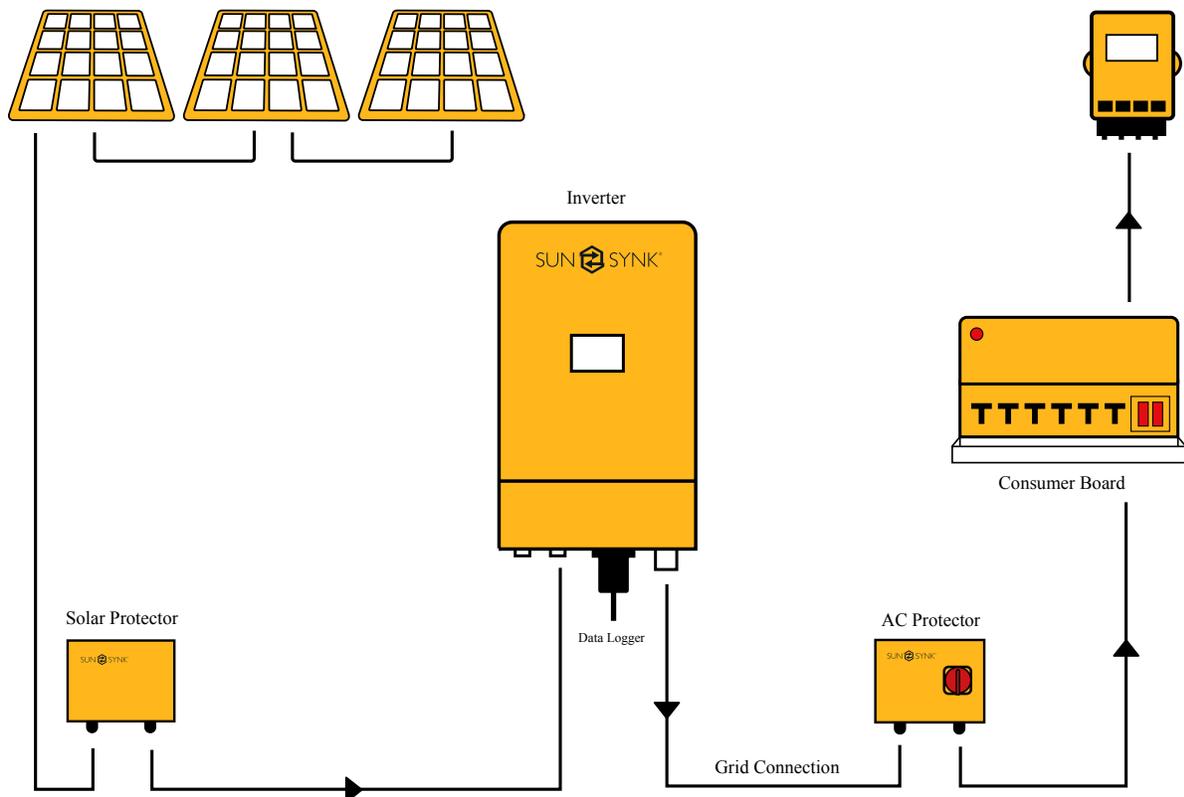
System Versatility

Sunsynk Storage Inverters without Batteries

The diagram below shows a system utilising a Sunsynk Storage Inverter without batteries, where the inverter operates as a conventional Grid-Tied / On-Grid inverter. In this system there is no battery storage so the power generated by the panels is delivered to the load (home appliances) or exported to the grid (this can be set via the LCD touch screen). Depending on the size of the array, you can split it into smaller arrays and connect them to separate ports that have MPPT in order to optimise solar production. (Please refer to the inverter's data sheet in order to select an appropriate solar array to install with an MPPT input.)

The system consists of the following components:

- 1) Solar array connected to the MPPT input;
- 2) Solar isolator and protection circuit;
- 3) Sunsynk inverter;
- 4) AC protection circuit and isolator;
- 5) Consumer unit connected with or without a CT coil.



System Versatility

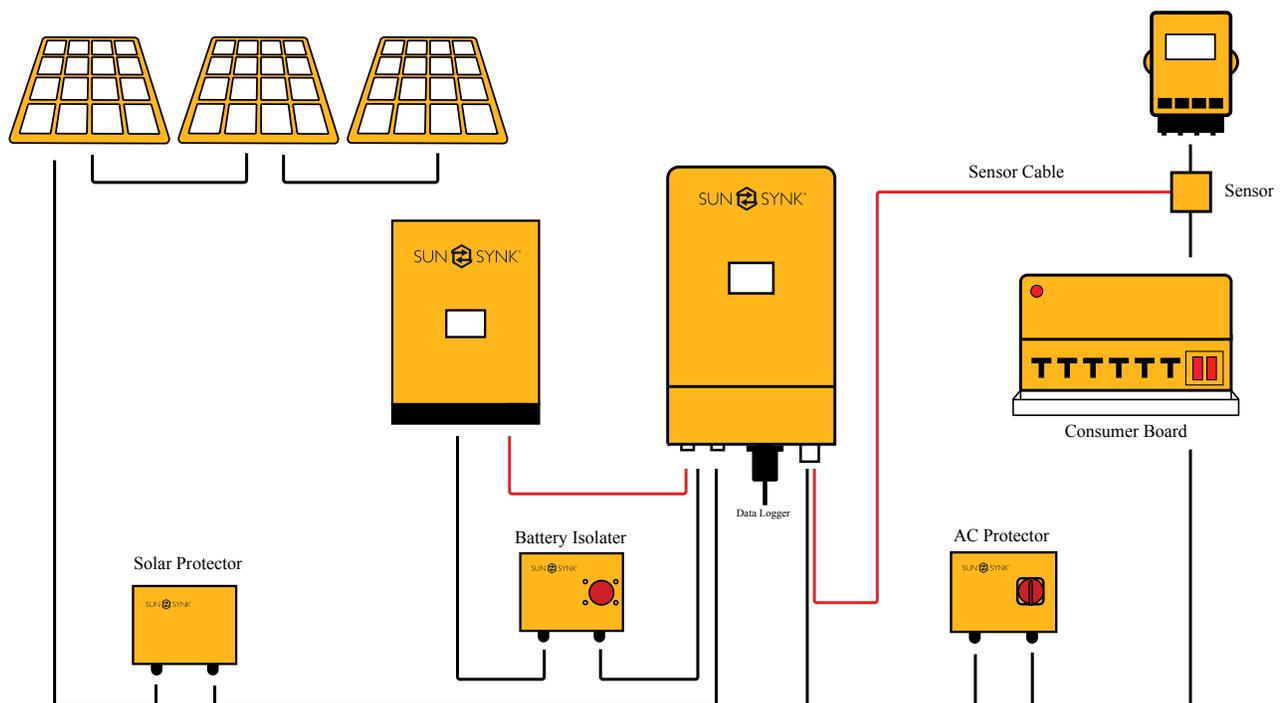
Sunsynk Storage Inverter with Batteries.

In this section we explain the simplest configuration for an On-Grid / Grid-Tied system utilising a micro-inverter system. This is an entry-level system for low-power applications with the option of exporting power to the grid. Micro-inverters ensure peak performance as each panel is connected to a port in the inverter complete with Maximum Power Point Tracking (MPPT).

In addition, micro-inverters do not require long DC strings and have a typical output of 220VAC and are convenient to install.

The micro-inverter system is comprised of the following parts:

- 1) The solar array where each module (panel) is connected to an MPPT port installed in the micro-inverter.
- 2) Battery Storage
- 3) A multi-channel Sunsynk Micro-Inverter.
- 4) Power isolator and protection circuit;
- 5) Consumer unit connected with or without a CT coil.



“ It is by far the best inverter we have used in the last two years. We’ve had no problems and it gives us a leading edge over the competition.”

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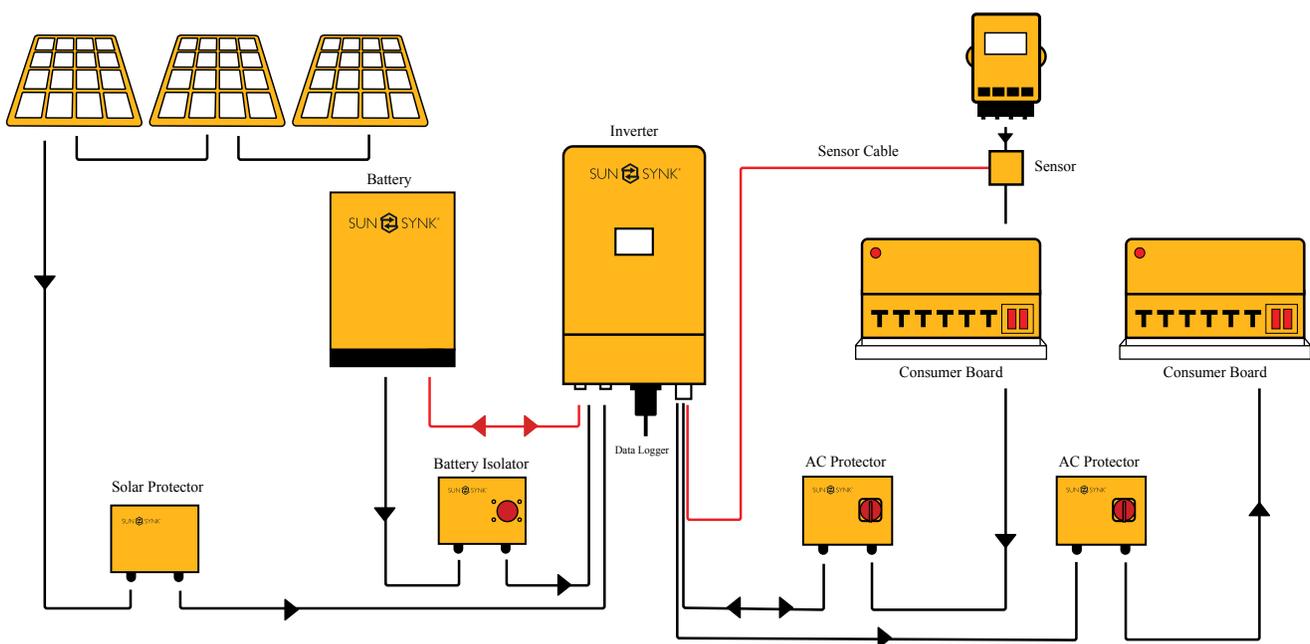
Sunsynk Storage Inverter with Essential & Non-essential Loads

On this page we talk about a hybrid system utilising a Sunsynk Storage Inverter with batteries. This diagram is similar to the one on the preceding page however in this case the load is separated into two groups ; a) non-essential and b) essential. Based upon your consumer board installed in your house there are loads that are essential or non-essential. The essential loads are those devices that still need to operate during a power cut such as lights, security devices, routers and computers while the non-essential loads can be categorised as power sockets, air conditioning, heaters etc.

The essential loads are connected to the 'LOAD' input of the Sunsynk Inverter , while the non-essential loads are connected to the 'GRID' input.

The system consists of the following parts;

- 1) Solar array connected to the MPPT input;
- 2) Solar isolator and protection circuit;
- 3) Sunsynk inverter;
- 4) Battery;
- 5) Battery isolator and protection circuit;
- 6) AC protection circuit and isolator for non-essential loads;
- 7) AC protection circuit and isolator for essential loads;
- 8) Consumer unit connected with a CT coil.



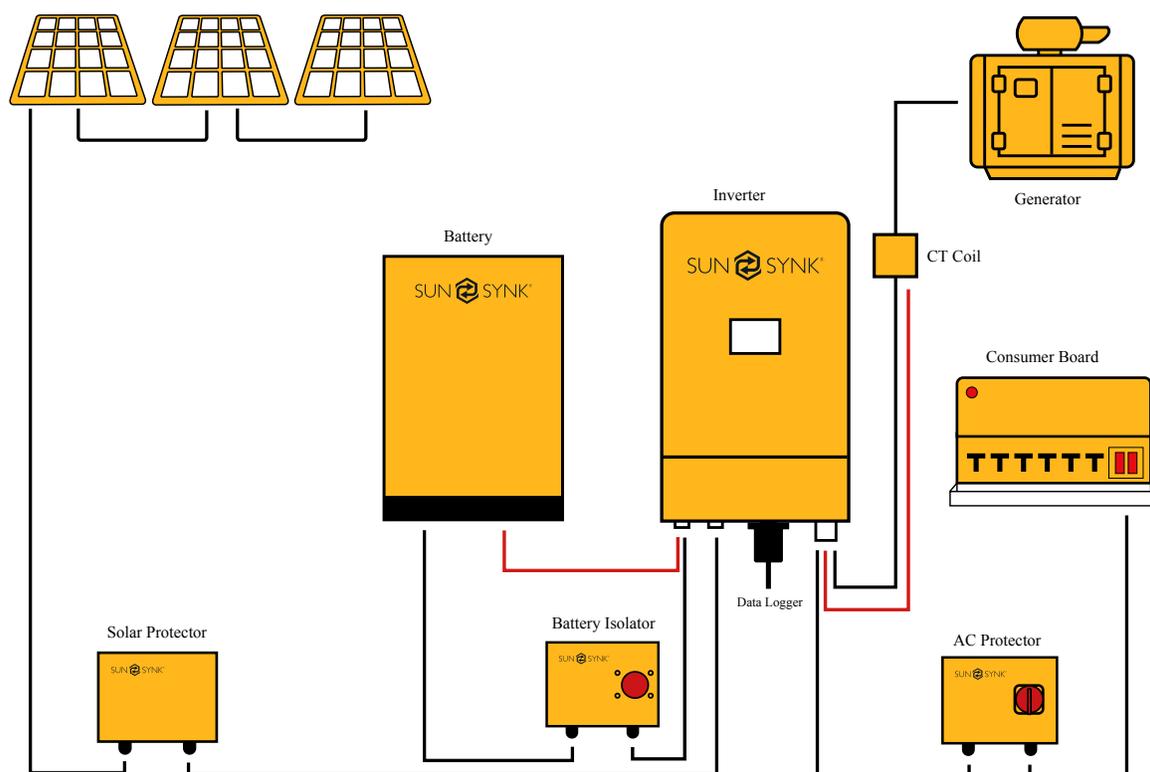
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Sunsynk Storage Inverter installed with a Diesel Generator

The Sunsynk Storage Inverter can be integrated into and also control a diesel generator, becoming very useful in applications such as construction sites and remote areas. The inverter can optimize the usage of the generator, providing money saving, less noise and air pollution. In the diagram below, the batteries can be charged with the solar panels, the grid, or the generator (you can choose that in the inverter settings).

This system is composed of the following components:

- 1) Solar array connected to the MPPT input;
- 2) Solar isolator and protection circuit;
- 3) Sunsynk inverter;
- 4) Battery;
- 5) Battery isolator and protection circuit;
- 6) AC protection circuit and isolator for the loads;
- 7) Generator connected with a CT coil.



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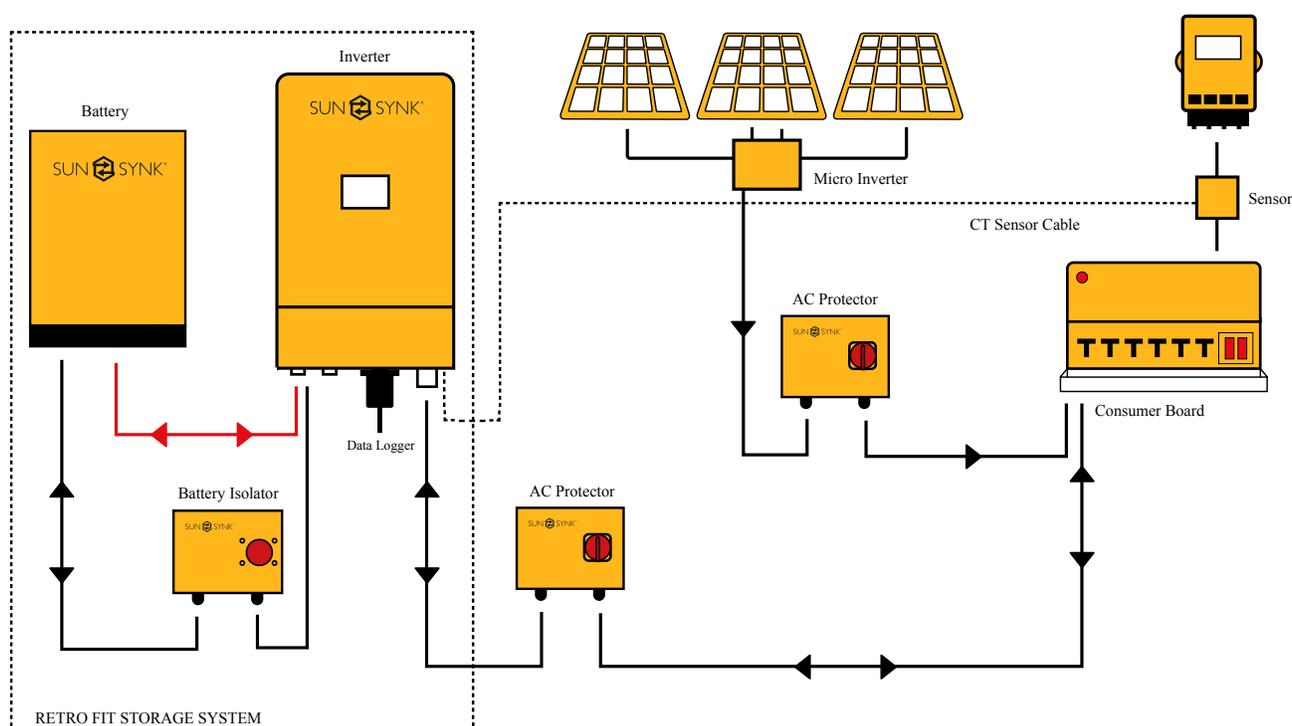
Micro-inverter System with Power Storage

The diagram below presents a system that uses a microinverter to transfer the power generated by the solar panels into the grid. However, an energy storage system is also connected to the grid through the Sunsynk Hybrid Inverter, which uses power from the electrical grid to charge the batteries.

During the day, the micro-inverter supplies power to the home appliances or exports it to the grid. At night, the batteries will provide power to the same home appliances or sell power to the grid thereby greatly reducing power consumption from the grid.

This system consists of the following parts;

- 1) Solar array connected to the MPPT inputs;
- 2) Multi-channel Sunsynk Micro Inverter;
- 3) AC protection system and isolator for the microinverter;
- 4) Sunsynk inverter;
- 5) Battery;
- 6) Battery isolator and protection circuit;
- 7) AC protection circuit and isolator for the loads;



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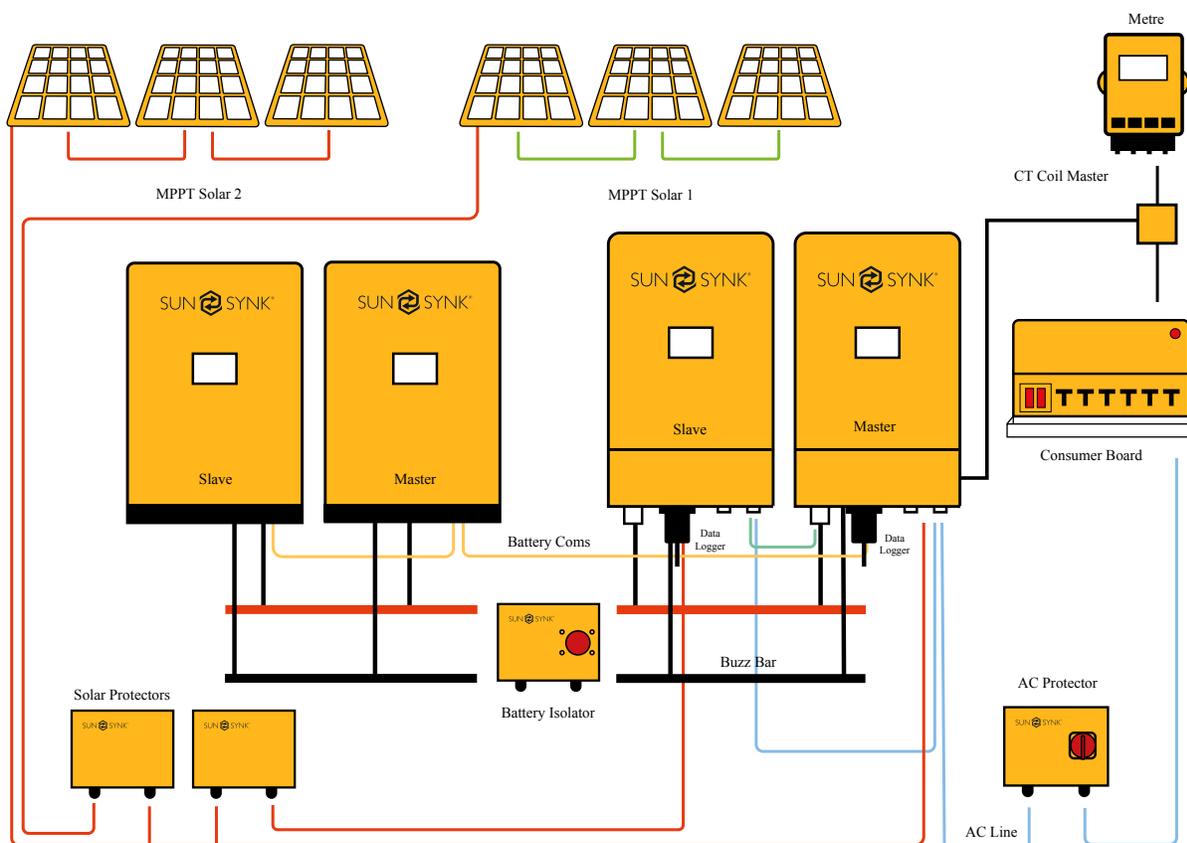
Paralleling Hybrid Inverters in Single Phase

When need more power, paralleling the Sunsynk Hybrid Inverters is a great alternative that can be used in order to scale up your power production. The figure below shows the diagram of a hybrid system that uses paralleling. In this case, the inverters are paralleled using the single-phase configuration, where only one CT coil and AC protection circuit are used (for the master).

Theoretically, you can parallel up to 16 inverters using the single-phase configuration. However, installers should be careful of the 'inrush' current (Input Surge) when switching on.

This system consists of the following components;

- 1) Solar arrays connected to the MPPT inputs;
- 2) Solar protection circuit and isolators;
- 3) Sunsynk inverters set as master and slave;
- 4) Communication cables;
- 5) Batteries;
- 6) Battery isolator and protection circuit;
- 7) AC protection circuit and isolator for the loads;
- 8) Consumer unit connected with a CT coil.



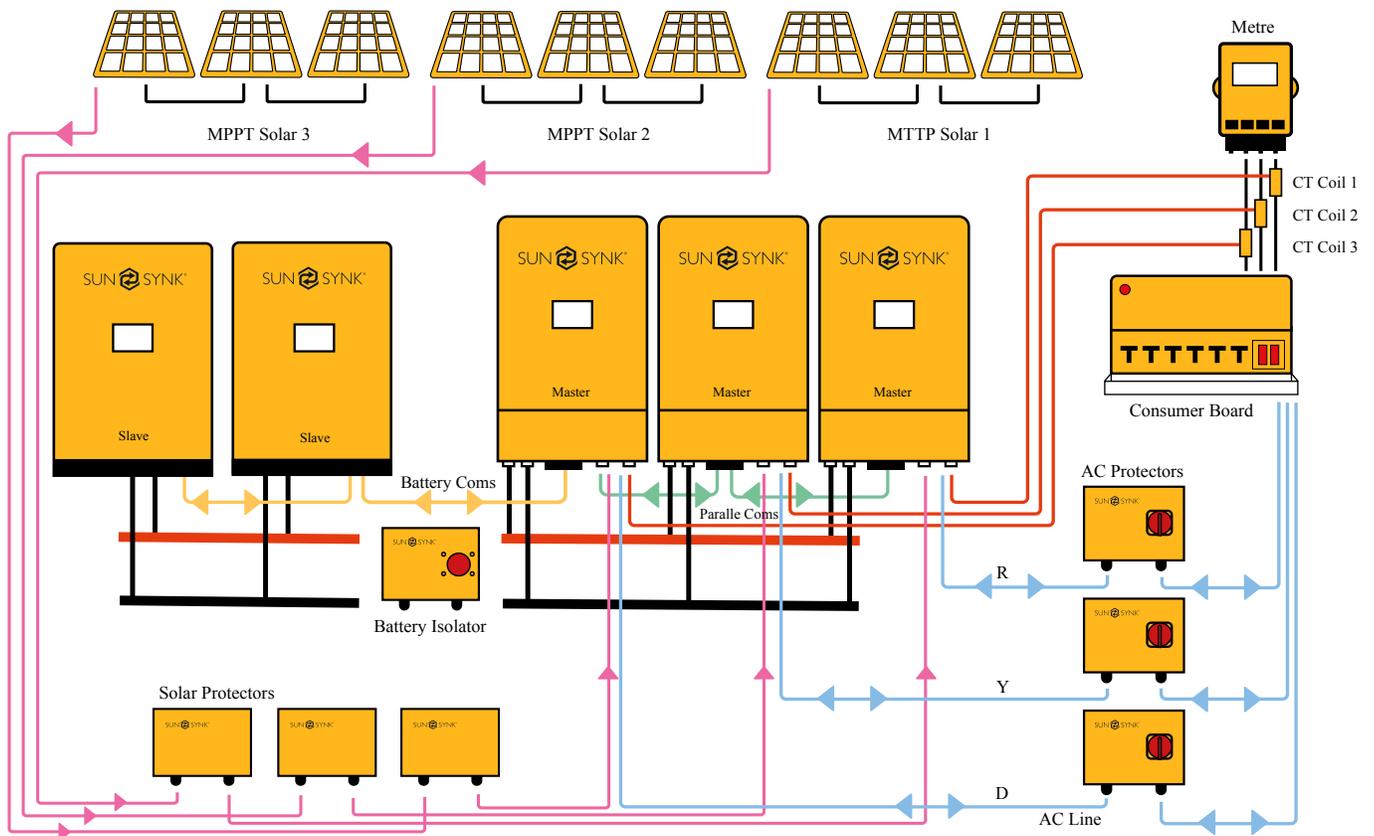
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Paralleling Sunsynk Hybrid Inverters in Three-Phase

The Sunsynk hybrid inverter can also be paralleled in three-phase with perfect phase rotation. In this case, you need to have three masters, and all the others are slaves. You will have one CT coil for each master, as well as one AC protector box for each phase.

This system is composed of the following components:

- 1) Solar arrays connected to the MPPT inputs;
- 2) Solar protection circuit and isolators;
- 3) Sunsynk inverters set as master and slave;
- 4) Communication cables;
- 5) Batteries;
- 6) Battery isolator and protection circuit;
- 7) AC protection circuit and isolator for the loads;
- 8) Consumer unit connected with a CT coil.



System Versatility

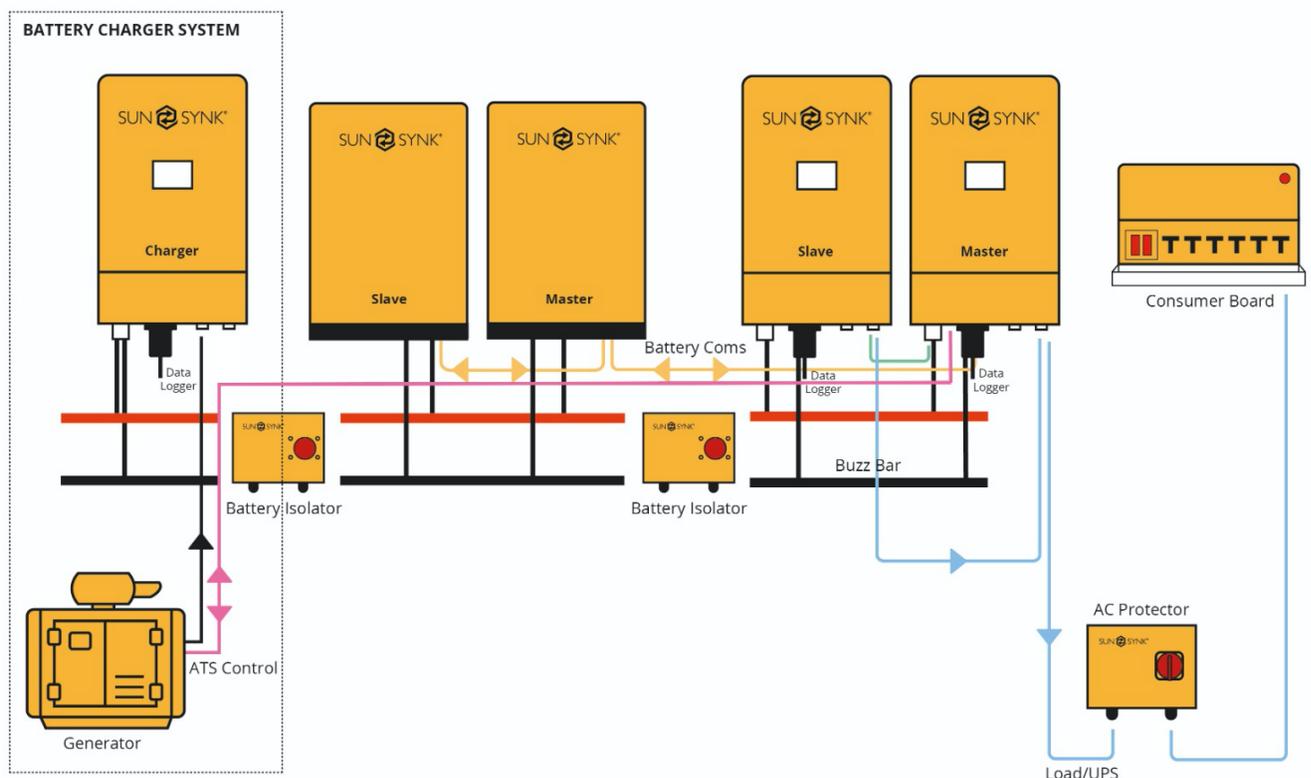
Sunsynk Hybrid Inverters in Parallel with Generator and Battery storage.

The figure below shows Sunsynk Hybrid Inverters connected in parallel using the single-phase configuration. This is a great configuration for construction sites and remote applications that demand more power, and where you will be using a diesel generator to power up equipment and site offices. In these applications, even though only 10% of the generator's power is used, it will be running continuously, thereby wasting money, producing noise and carbon emissions.

The aim of this circuit is to allow the generator to charge the batteries while the Sunsynk Inverter is employed as a 'charger inverter' to control the generator. Therefore, the charger inverter will turn the generator off when the batteries are full and the other inverters will get this power and send it to the grid or to the electrical equipment.

This system set-up is as follows;

- 1) Sunsynk inverters set as master and slave;
- 2) Communication cables;
- 3) Batteries;
- 4) Battery isolators and protection circuits;
- 5) AC protection circuit and isolator for the loads;
- 6) Generator;
- 7) Charger inverter.



The Sunsynk 5kW Hybrid Inverter:

“The Sunsynk Hybrid Inverter is an efficient power management machine that is ideal for home installations. The Sunsynk is the best hybrid of its kind, offering all the features of an efficient grid-tie inverter and a powerful battery inverter charger in one simple affordable unit.”

System Versatility

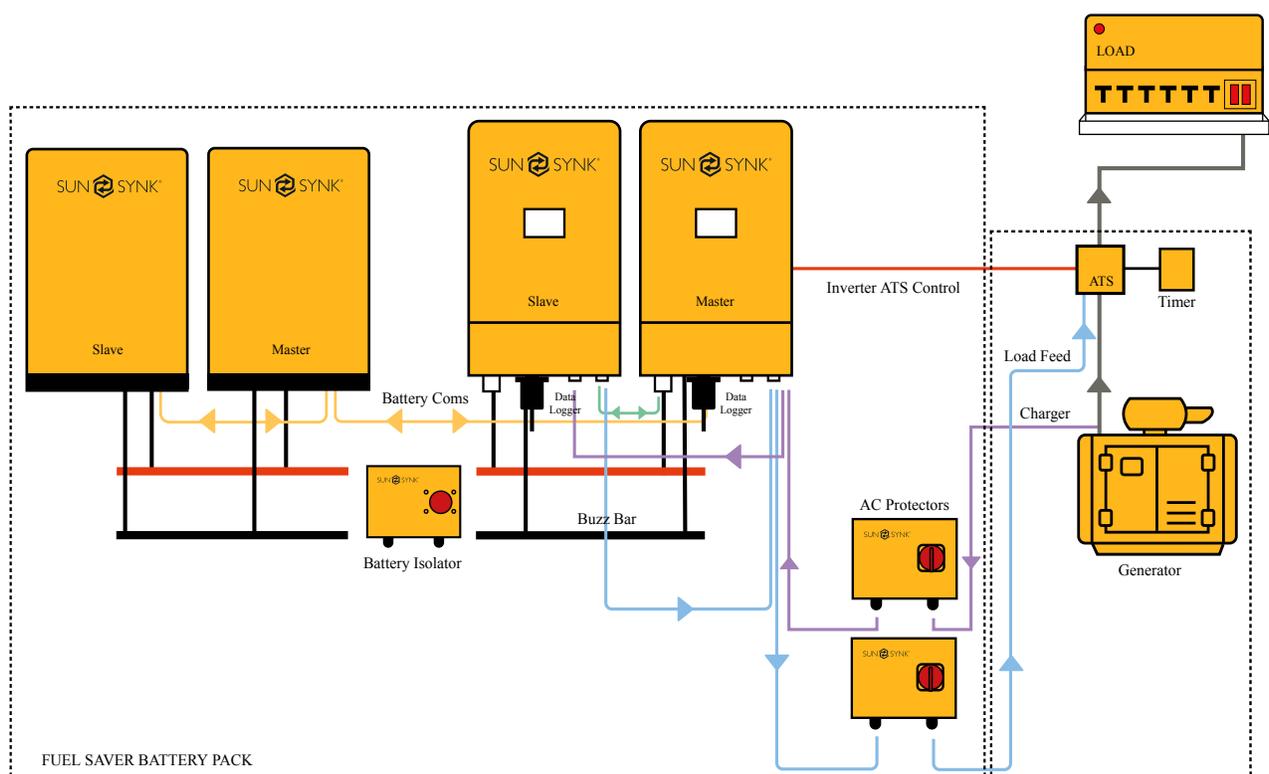
Sunsynk Hybrid Inverters in Parallel for Fuel Economy.

Sunsynk Hybrid Inverters can also be placed in parallel to save fuel when using large capacity generators. The Sunsynk Inverters will be used to charge batteries with power taken from the generator.

Once the batteries have reached maximum capacity the Sunsynk Inverter will turn the generator off thereby reducing fuel consumption, carbon emissions and noise pollution. Once power is required from the appliances, the inverter reverses and discharges the batteries thereby providing power to the load.

The system consists of the following components:

- 1) Sunsynk inverters set as master and slave;
- 2) Communication cables;
- 3) Batteries;
- 4) Battery isolator and protection circuit;
- 5) AC protection circuit and isolator for the loads;
- 6) AC protection circuit and isolator for the generator;
- 7) Generator;
- 8) Automatic transfer switch (ATS) and timer.





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