



Solar Marine 2020



Mission Statement

Our mission is 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 better value for money within

About Us

Established over 20 years ago, Sunsynk® is part of the Global Tech China Group and is based out of Hong Kong with manufacturing and design bases in Ningbo, China. We are closely partnered with the Science Department of Ningbo University with which technology is shared and developed. The company has approximately 80 staff working on our projects at any one time.

Our key products fall into the following categories and full details can be found within this catalogue or in our website; www.sunsynk.com.

The Global Tech China Group was founded in 2004 and is a Hong Kong registered company made up of British & Chinese engineers. We have over 30 patents and some of these inventions have directly influenced the world's electronic appliance development since 2004.

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

Homes of the Future

"It seems sensible that new build houses will simply adopt solar and storage as part of the initial building of the property. If the energy prices move like I think they will do, it would be a severe disadvantage trying to sell a house without it. EV is probably going to be the big game changer as to how we think about energy. "Up until now, we're sort of conditioned to just pay a bill and not necessarily think too much about the energy we consume. It's totally understandable. Importing electricity is still relatively cheap. But, as we stop paying tax on fuel, as we all move to EVs and our energy usage doubles, it will naturally put a spotlight onto just how many kWh we're consuming. "Domestic properties typically don't have a Building

Management System, but I believe that within 10 years we'll want homes that can make informed decisions on what to turn on and when based on energy profiles. Things like the smart metering roll out is just the beginning of this energy ethos. And if we consider that replacing everyone's metering is not cheap by any means, you can begin to appreciate just how much energy providers believe this to be the way forward. Simply expect the technology to get smarter and more effective because it's more dynamic."

Basic Terminology

Before we can start to explain about using solar batteries we need to familiarise you with some basic terminology

Alternating Current (AC)	The flow of electricity that constantly changes direction between positive and negative sides. Almost all power produced by electric utilities in the United States moves in current that shifts direction at a rate of 60 times per second.
Ampere (Amp)	The unit of measure that indicates how much electricity flows through a conductor. It is like using cubic feet per second to measure the flow of water. For example, a 1,200-watt, 120-volt hair dryer pulls 10 amperes of electricity current. (amps = watts/volts)
Array	A collection of electrically connected photovoltaic (PV) modules.
Battery	Batteries are often sold with a PV system. The primary purpose is to store the electricity not immediately used, which could be used at some later time. With net metering, the value of batteries is less because the utility grid basically acts as a storage facility. For a reliable generation system that can function independent of the utility grid, however, batteries may be a viable component to the total system. Back-up generators may be included in a system to provide power when the PV system is not operating, and are generally included when systems are not grid connected. Neither batteries nor generators are eligible for rebate money.
Battery Capacity	The total number of ampere-hours that can be withdrawn from a fully charged battery.
Circuit	One or more conductors through which electricity flows.
Current	The flow of electric charge in a conductor between two points having a difference in potential (voltage).
Customer Load	The amount of power your site uses. Load may be expressed in kilowatts (capacity) or kilowatt-hours (energy). A site's peak kilowatts generally refers to when electric demand requirements are highest.
Cycle	The discharge and subsequent charge of a battery.
Deep Cycle	Type of battery that can be discharged to a large fraction of capacity many times without damaging the battery.
Demand	The level at which electricity (or natural gas) is delivered to end-users at a given point in time. Electric demand is measured in kilowatts.
Direct current (DC)	The flow of electricity that flows continuously in one direction.
Efficiency	The ratio of output power (or energy) to input power (or energy). Expressed in percent.
Electrical Current	A flow of electrons; electricity.
Electrical Grid	An integrated system of electricity distribution, usually covering a large area.
Gel Type Battery	Lead-acid battery in which the electrolyte is composed of a silica gel matrix.
Grid	The electricity transmission and distribution system that links
Grid- Connected PV System	A PV system in which the PV array acts like a central generating plant, supplying power to the grid.
Inverter	Converts DC power from the PV array/battery to AC power compatible with the utility grid and local AC loads.
Irradiance	The solar power incident on a surface. Usually expressed in kilowatts per square meter. Irradiance multiplied by time equals Insolation.

Kilowatt (kW)	One thousand watts. A unit of measure of the amount of electricity needed to operate given equipment. For example, one kW is enough power to illuminate 10 light bulbs at 100 watts each. (volts x amps = watts)
Kilowatt-hour (kWh)	The amount of kW produced over a period of time, or one kilowatt of electricity supplied for one hour. A unit of energy. Power multiplied by time equals energy. For example, a one kW PV system, if operating at full capacity for 5 hours will produce 5 kWh of electricity during that time.
Load	The amount of electric power used by any electrical unit or appliance at any given time.
Meter	A device that measures levels and volumes of customers' electricity and gas use.
MPPT	Maximum Power point Tracker; Means of a power conditioning unit that automatically operates the PV-generator at its MPP under all conditions.
Peak Load	The highest electrical demand within a particular period of time.
Peak Sun Hours	The equivalent number of hours per day when solar irradiance averages 1,000 w/ m2. For example, six peak sun hours means that the energy received during total daylight hours equals the energy that would have been received had the irradiance for six hours been 1,000 W/m2.
Photovoltaic Array	A group of photovoltaic modules.
Photovoltaic Module	An integral, encapsulated unit containing a number of PV cells. A group of photovoltaic cells combined in series and/or parallel and encapsulated in an environmentally protective laminate. The smallest replaceable unit in a PV array, modules are the building blocks for arrays.
Photovoltaic System	An installation of PV modules and other components designed to produce power from sunlight and meet the power demand for a designated load.
Solar Hot Water	A process that heats water directly using the sun's radiant energy.
Storage	Storage refers to saving surplus electricity produced by a PV system. Generally batteries are used as storage devices.
String	A number of modules or panels interconnected electrically in series to produce the operating voltage required by the load.
Uninterruptible Power Supply (UPS)	The designation of a power supply providing continuous uninterruptible service. The UPS will contain batteries.
Volt	The amount of force required to drive a steady current of one ampere through a resistance of one ohm. Electrical systems of most homes and offices use 120 volts. (Volts = watts/amps)
Watt	(W) Electric measurement of power at one point in time, as capacity or demand. For example, light bulbs are classified by wattage. (1000 watts = 1 kilowatt)



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Professional Systems



Portable Systems



Sunsynk Basics



Solar Air Con Systems



Solar Panels and Batteries



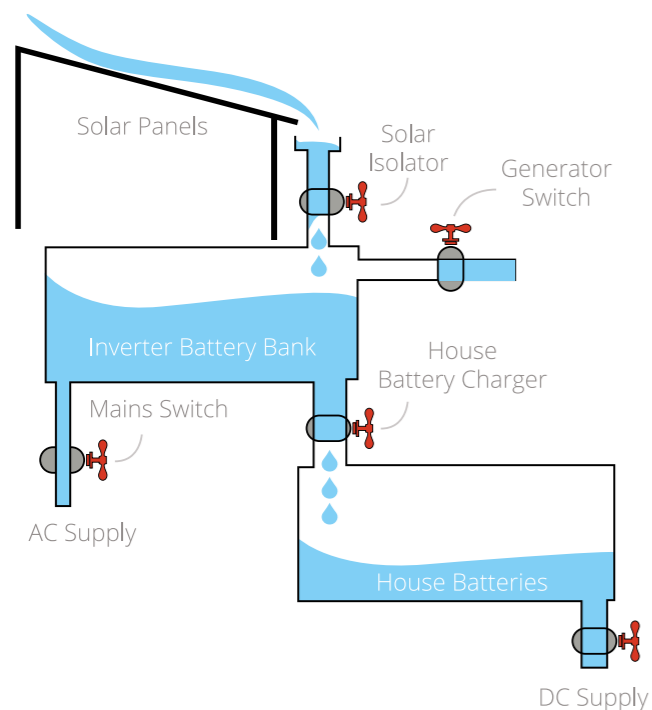
Sunsynk Life Lynk



How much power do you expect to generate?

The Sunsynk solar systems are very efficient up to 97.6% depending upon the number of solar panels being used. That means nearly all the power produced by the solar array can be used. The Sunsynk Parity Inverter is very efficient (up to 97.6%) and this is reliant on the number of solar panels being used. The following table demonstrates power generation v. panel array).

Daily Requirements Wh	Power provided by solar (Winter) Wh	Gen Top Up	8KVA Gen Run Hours	Fuel usage per 24H
10,000	3,400	6,600	1	2.475
20,000	4,400	15,600	2	5.85
30,000	8,500	21,500	3	8.0625
40,000	12,920	27,080	3	10.155
60,000	21,760	38,240	5	14.34



The best way to think of the system is a bit like rain water (Solar Panel) filling a water tank (Battery bank) If you get little rain then you can't fill the tanks, use too much then you will empty the tank

Using the power produced

Providing the house batteries (Boats DC batteries are fully charged) most of the power can be used to run the boats electrical systems.

What you can power will very much depend on your system configuration. For example if the DC bilge pump is running a lot of the time and you only have a small system then most if not all (that might be enough power) will be used indirectly powering the pump.

What you can power will depend very much on the system size and configuration. In the case of a small system, it is highly likely that a DC bilge pump will drain all of the stored power if it runs continuously. The following table demonstrates the average power consumption of utilities and is useful when assessing a potential system size.

You can see from the above table that there are some 'power-hungry' appliances besides air conditioners. A de-humidifier or refrigerator can also consume a lot of electricity!

Item	Power (Watts)	Hour Used	Total Power
20 x 7 Watt LED Lights	140	10	1.4kWh
Modern Refrigerator	200	24 (50% Duty cycle)	2.4kWh
Old Refrigerator	450	24 (50% Duty cycle)	5.4kWh
Electrical Kettle	1800	1	1.8kWh
Washing Machine	3200	1	3.2kWh
Small Air con Unit	800	12 (50% Duty cycle)	4.8kWh
Med Air Con Unit	1600	12 (50% Duty cycle)	9.6kWh
Large Air Con Unit	3200	12 (50% Duty cycle)	19.2kWh
DC Systems Top up	50	24 Hours	1.2kWh
2 x Phone Charger	50	5	0.2kWh
42" TV + Sat + DVD	200	6	1.2kWh
PC Charger	90	4	0.36kWh
Music System	75	4	0.30kWh

You can see from the above table that there are some 'power-hungry' appliances besides air conditioners. A de-humidifier or refrigerator can also consume a lot of electricity!

If you have installed a small system with for example, a 1KW solar array , you can expect to produce 3-6kWh per day. In that case, you can only power a limited number of utilities.

Item	Power (Watts)	Hour Used	Total Power
10 x 7 Watt LED Lights	70	10	0.7kWh
DC Systems Top Up	50	24 Hours	1.2kWh
2 x Phone Charger	50	5	0.2kWh
PC Charger	90	4	0.36kWh
Music System	75	4	0.30kWh
		Total 24 Hour Power	2.76 kwh

For small systems you are limited to the amount of power your system generates. If you require occasional usage and have 4 x 200Ah/12V batteries then it is very feasible to run more appliances. The below table demonstrates this:-

Item	Power (Watts)	Hour Used	Total Power
10 x 7 Watt LED Lights	140	10	0.7 kWh
Modern Refrigerator	200	24 (50% Duty cycle)	2.4kWh
Electrical Kettle	1800	1	1.8kWh
Small Air Con Unit	800	6 (50% Duty cycle)	2.4kWh
DC Systems Top Up	50	24 Hours	1.2kWh
2 x Phone Charger	50	5	0.2kWh
42" TV + Sat + DVD	200	6	1.2kWh
PC Charger	90	4	0.36kWh
Music System	75	4	0.30kWh
		Total Power	10.5 KWH

In the past, when boat owners have been connected to the grid, their power consumption has been quite heavy with a daily usage of 40-80kwh every 25hrs. From the above tables, it can be seen that to maintain a similar power consumption, a generator set must be added to the system.

Generator Fuel Consumption

It is possible to keep power consumption below 8kva if the user does not switch on everything at once.

Should we require a large amount of power then a generator should be added to the system. That being so, we should then take into consideration the management of fuel by the generator. Typically, a generator uses 10 litres of fuel per kva every 24hrs , even when 'off-load'. A 10kva generator (Gen-Set) running 7-days a week , can typically use 700 litres of fuel each week. If for example the fuel is HK\$14.00 per litre then a week's consumption will cost HK\$9,800. This is a lot of money besides, re-filling a generator's tank can be prove to be a logistics nightmare.

Daily Requirements wH	Power provided by solar (Winter) Wh	Gen Top Up	8KVA Gen Run Hours	Fuel usage per 24H
10,000	3,400	6,600	1	2.475
20,000	4,400	15,600	2	5.85
30,000	8,500	21,500	3	8.0625
40,000	12,920	27,080	3	10.155
60,000	21,760	38,240	5	14.34

As you can see the fuel consumption is massively reduced from 700L per week to 16 - 98L (Very heavy users) compared with 700L per week huge saving (This is a major advantage of our hybrid parity system).





Basics Systems

Simple panels system to charge the house batteries these are all based on the Sunsynk professional chargers Sunsynk's MP Professional Charge Controller is an advanced maximum power point tracking (MPPT) battery charger for off-grid photovoltaic (PV) systems up to 1.4Kw. The controller provides the industry's highest peak efficiency of 97% and significantly less power-loss compared to other MPPT controllers. In simple terms the controller harvests maximum energy from the PV array in a battery-based solar electric system by using a

variety of MPPT strategies. The controller's secondary objective is to ensure that the batteries receive a full charge without becoming overcharged. The Mass Power MPPT features a smart tracking algorithm that maximises the energy harvest from the PV by rapidly finding the solar array peak power point with extremely fast sweeping of the entire I-V curve. It can increase the yield of the PV array by up to 30% compared to any system operating without such a controller.

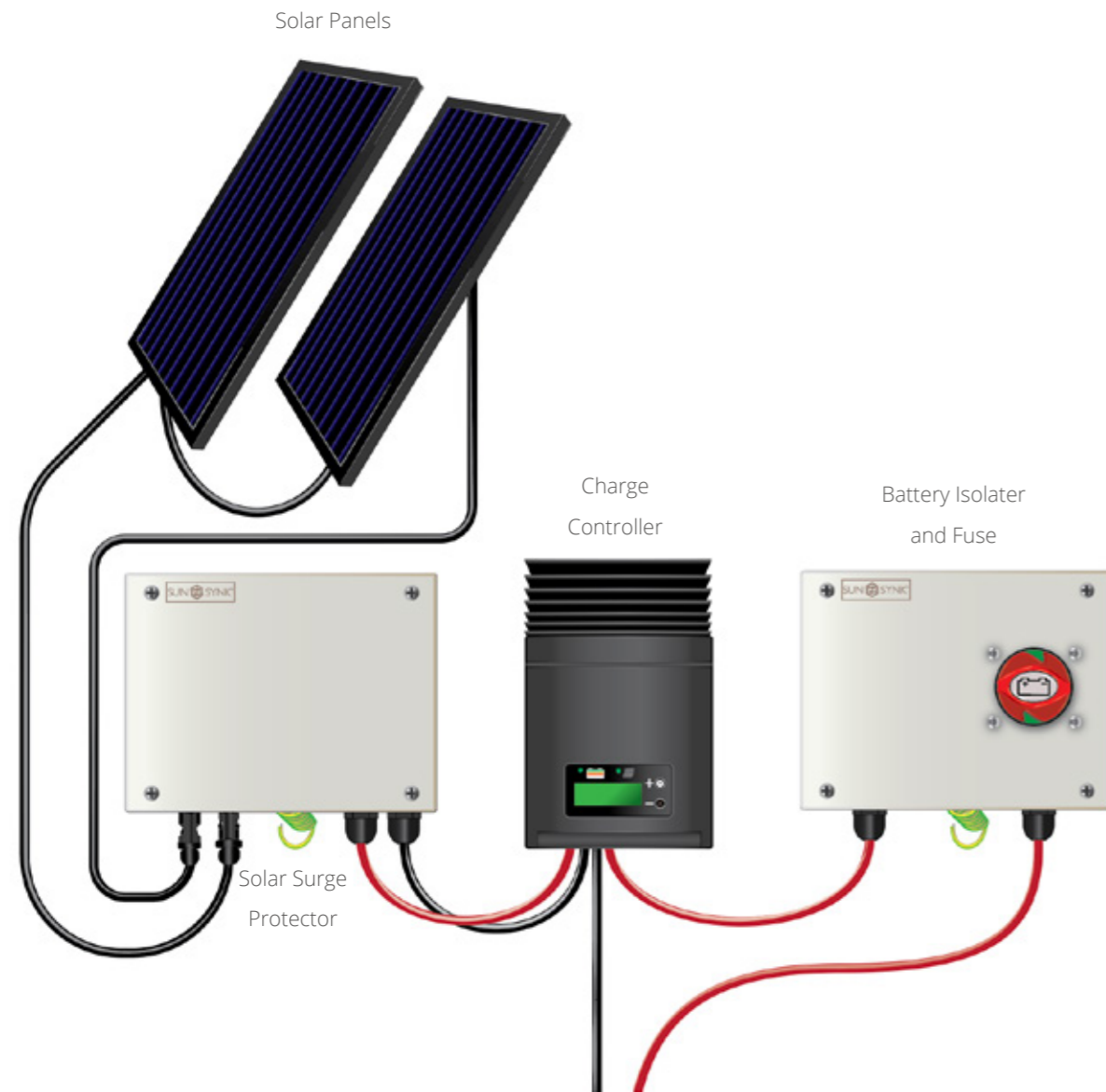
Features of this product are:

- Maximum power point tracker
- Peak Efficiency of 97%
- Voltage and current regulation
- PWM xontrol
- Current compensated load disconnection

- Automatic load reconnection
- Temperature compensation displays
- Multifunction LCD display
- 2 LEDs showing operating status.

System Size	200 Watt	500 Watt	1080 Watt
Solar Array	2 x 100 Watt	5 x 100 Watt	4 x 270 Watt
Fixing Kit	Inc	Inc	Inc
Charge Controller	DCRG01	DCRG01	DCRG01
Protection Device	Solar Surge Protector	Solar Surge Protector	Solar Surge Protector
Order As	SSBSKT-200	SSBSKT-500	SSBSKT-1000

SSBSKT-200/1000 SYSTEMS



System Size	200 Watt	500 Watt	1080 Watt
Solar Array	2 x 100 Watt	5 x 100 Watt	4 x 270 Watt
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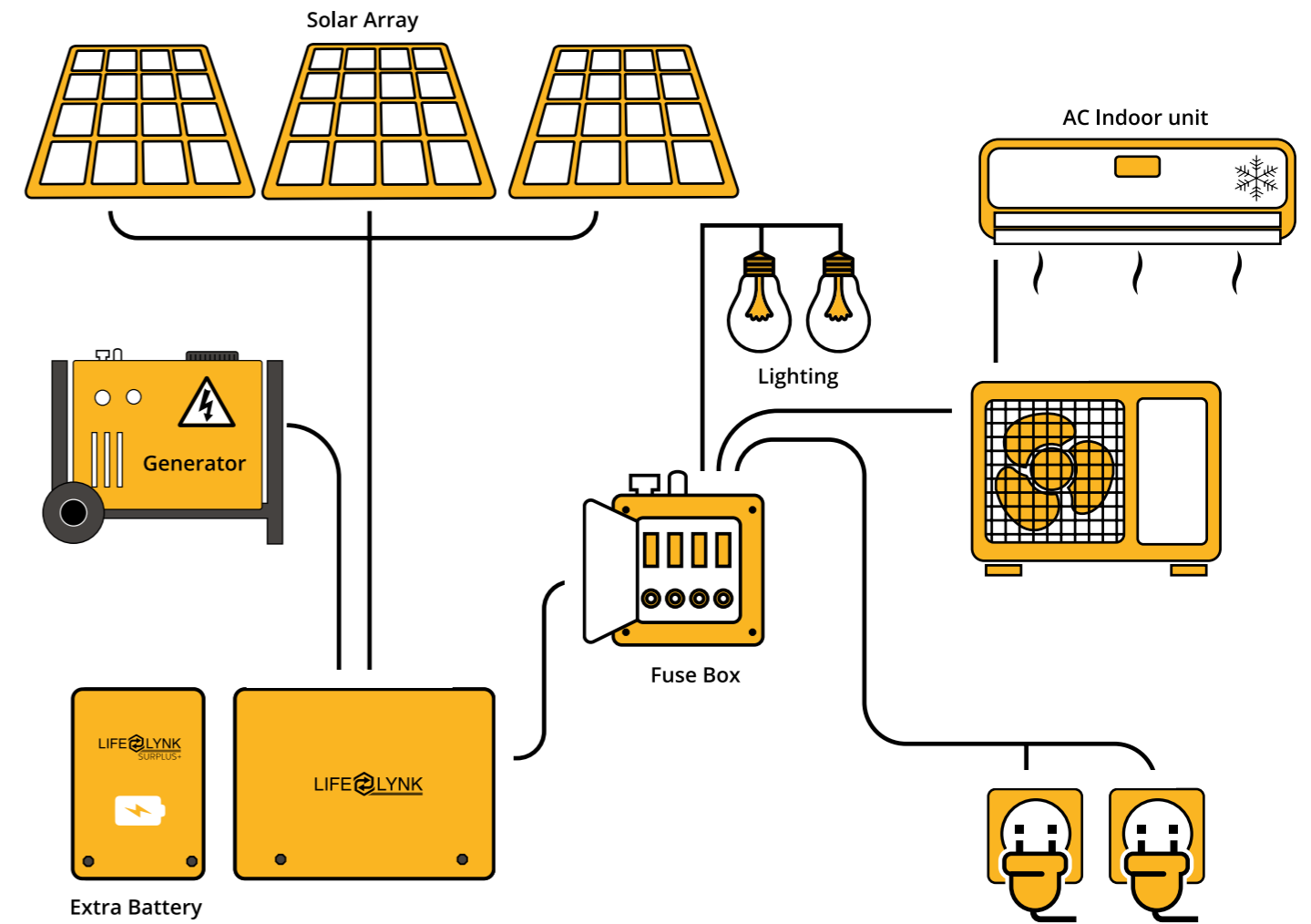
The Sunsynk Lifelynk Specification

Features:

1. Peak Power 4kW pure sine wave
2. High 2.5kW continual power that can run many appliances with a peak of 4kW
3. Bi - directional inverter thank can rapidly charge its internal batteries in just one 1 hour
4. 2000 Watt MPPT charge controller
5. Generator autostart feature

Inverter Voltage	48V (40 - 55V)
DC loads under full current	50 Amp
Efficiency	>92%
Rated power	3000W Peak 4kW
AC Voltage	230V
Frequency	50Hz
Wave type	Pure Sine wave
AC Charging Voltage	185 - 260V 185 - 260V
Isolators	
Solar DC Isolator	Yes
Mains On / Off Switch	Yes
Battery DC Isolator	Yes
Built in Battery 2500 Wh 48V	
No of batteries	5 x 500 Wh Life Po4 48V with built in BMS

There is a very real advantage in using the Inverter on a generator system as it will assist greatly in reducing the consumption of diesel. The generator simply runs for a period of time and the power is sent through the inverter to the user. At the same time the inverter stores power so that when the batteries are full, the inverter can stop the generator and the power source is switched to the batteries.



What can the System Power?

System kWh	1	2.5	5.0	10
Main Unit	Lifelynk	Lifelynk	Lifelynk *	Lifelynk
Extra battery cabinet		One	Three	
No of batteries used	2 Packs	5 Packs	10 Packs	20 Packs
Solar Array 2 SH	2 x 320 Watt	4 x 320 Watt	8 x 320 Watt	16 x 320 Watt
Solar Array 4 SH	2 x 150 Watt	2 x 320 Watt	4 x 320 Watt	8 x 320 Watt
Solar Array 6 SH	2 x 100 Watt	2 x 270 Watt	3 x 320 Watt	6 x 320 watt
Protection devices	1 x Combiner box & lightning protector	1 x Combiner box & lightning protector	1 x Combiner box & lightning protector	1 x Combiner box & lightning protector
	Mains surge protector & isolator	Mains surge protector & isolator	Mains surge protector & isolator	Mains surge protector & isolator
Power use over 24 hour period	42	104	208	417
Power used over 12 hour period	83	208	417	833
Power used over 8 hour period	125	313	625	1250
Peak power	4,000 Watts	4,000 Watts	4,000 Watts	4,000 Watts
Charge time	6 Hours	6 Hours	6 Hours	6 Hours



2500 Watt all in one unit on its own

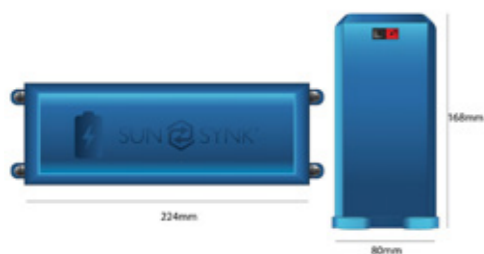
Peak Power 4kW pure sine wave

High 2.5kW continual power that can run many appliances with a peak of 4kW

Bi directional inverter thank can rapidly charge its internal batteries in just one 1 hour

2000 Watt MPPT charge controller

ORDER AS :- SLLMU-01 (Price exclude batteries)



Sunsynk Lifelynk Battery:

(Max 5 per cabinet)

500 Watt hour

48V Built-in BMS

Order Code: SLLBT-500



Sunsynk Lifelynk Battery Cabinet:

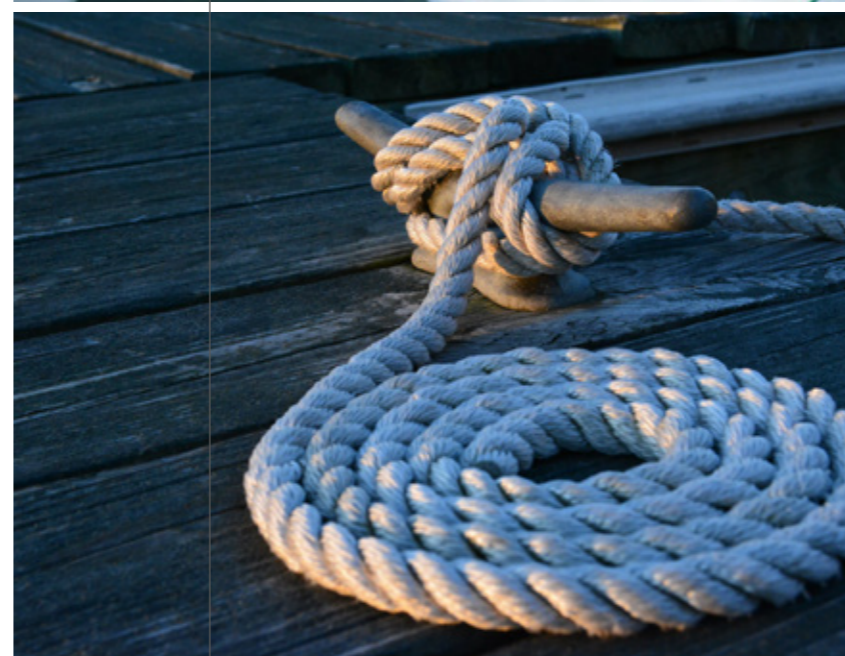
Additional battery cabinet for use with Sunsynk

Lifelynk

Can take 5 more batteries

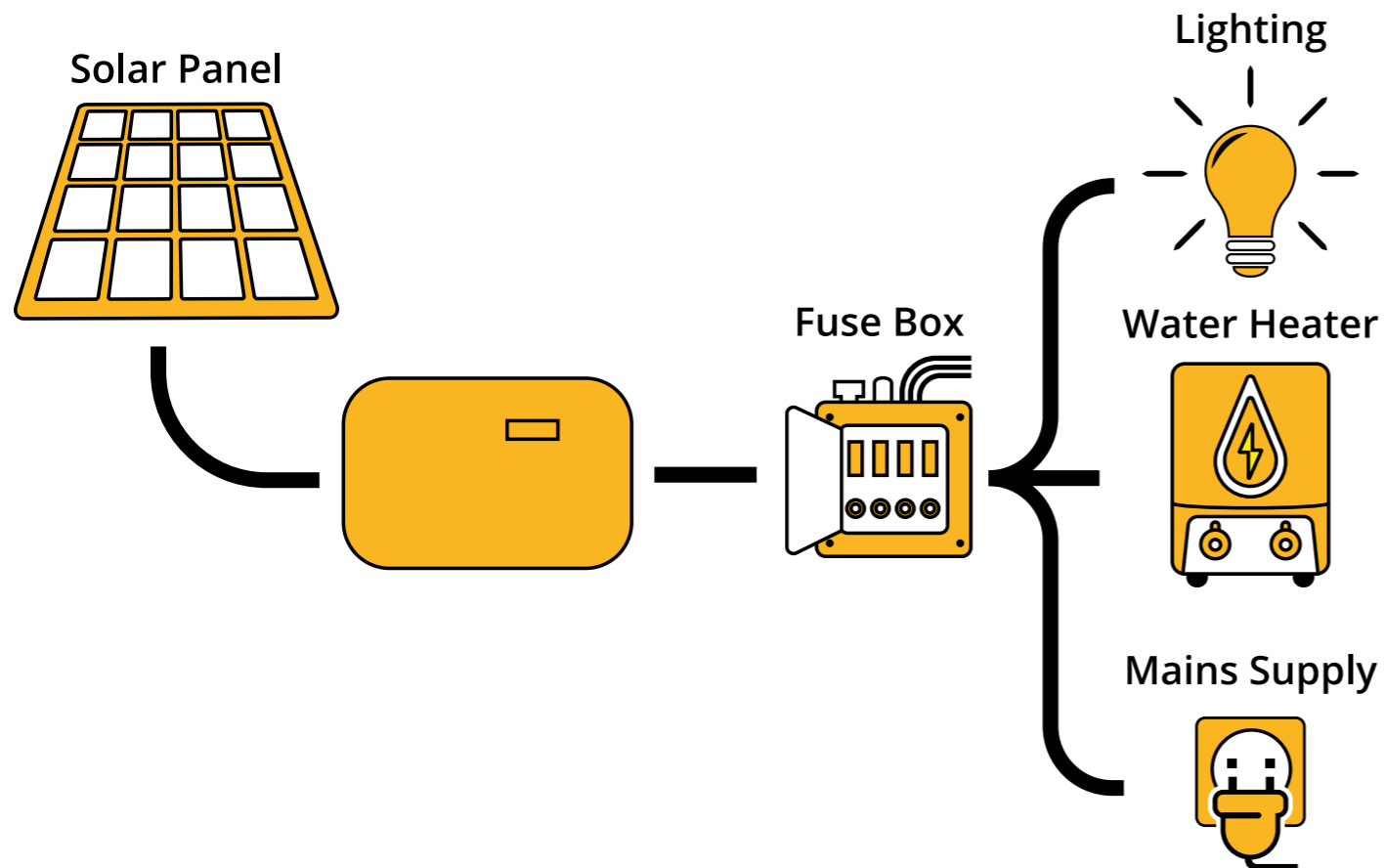
Max 3 extra cabinets can be used

Order as - SLLBH-5



Complete Lifelynk Systems

System kWh	1	2.5	5.0	10
Main Unit	Lifelynk	Lifelynk	Lifelynk *	Lifelynk
Extra battery cabinet		One	Three	
No of batteries used	2 Packs	5 Packs	10 Packs	20 Packs
Solar Array 2 SH	2 x 320 Watt	4 x 320 Watt	8 x 320 Watt	16 x 320 Watt
Solar Array 4 SH	2 x 150 Watt	2 x 320 Watt	4 x 320 Watt	8 x 320 Watt
Solar Array 6 SH	2 x 100 Watt	2 x 270 Watt	3 x 320 Watt	6 x 320 watt
Protection devices	1 x Combiner box & lightening protector	1 x Combiner box & lightening protector	1 x Combiner box & lightening protector	1 x Combiner box & lightening protector
	Mains Surge protector & isolator	Mains Surge protector & isolator	Mains Surge protector & isolator	Mains Surge protector & isolator
Solar Array 2 SH	SLLKit -1000-2	SLLKit -2500-2	SLLKit -5000-2	SLLKit -10000-2
Solar Array 4 SH	SLLKit -1000-4	SLLKit -2500-4	SLLKit -5000-4	SLLKit -10000-4
Solar Array 6 SH	SLLKit -1000-6	SLLKit -2500-6	SLLKit -5000-6	SLLKit -10000-6



Depth of Discharge (DoD)

DoD means how much you can use the battery before recharging it. Just as it may be harmful for your phone's battery to have only 2% remaining, the same goes for a solar battery storage system. If you use up 100% of its charge or exceed its DoD limit before recharg-

ing it, the lifespan will be shortened significantly. For example, if you buy a solar battery storage system that has a capacity of 5kW energy storage and 80% DoD, remember to charge it before using up the entire 4kW in order to extend the life of the battery.

There are several advantages of the Sunsynk Parity Inverter and these can be summarised as; It can be programmed to store mains power when the mains grid is at its cheapest. It will manage the amount of DC power stored into the batteries. The batteries will not be allowed to run below their DoD. The inverter can be programmed to act as an Uninterrupted Power Supply. It combines several functions within one shell such as charge controller, inverter, battery charger, programmable power management and uninterrupted power supply.

Its convenient LCD display offers the user a configurable and accessible button operation and once the Wifi dongle has been attached the user can monitor and adjust remotely the inverter's functions to make the most of installed power generation and storage.



	1 KW System	8 KW System	18 KW System	24 KW System
Solar Aray	10 x 100 Watt	24 x 324 Watt	52 x 340 Watt	70 x 340 Watt
Inverter	1 x 5 KW Hybrid	1 x 8 Kw Hybrid	2 x * Kw Hybrid	3 x 8 kw Hybrid
Batteries	1 x 5KW Lithium	8 x 5Kw Lithium	200 Ah AGM Call 90 Kwh x 36	200 Ah AGM Call 90 Kwh x 48
Fixings	Fixings Panel	Fixings Pane	Fixings Panel	Fixings Panel
Protection De- vices	Battery isolator x 1	Battery isolator x 1	Battery isolator x 1	Battery isolator x 3
	Solar combiner box & protector x 1	Solar combiner box & protector x 2	Solar combiner box & protector x 4	Solar combiner & protector x 6
	AC Isolator & surge protector x 1	AC Isolator & surge protector x 1	AC Isolator & surge protector x 1	AC Isolator & surge protector x 3
Order Code	SSPRMS-1K	SSPRMS-8K	SSPRMS-18K	SSPRMS-24K



Professional Marine Systems

Complete systems for larger vessels

Sunsynk have invented a highly efficient parity inverter with storage. This is an amazing device that will ensure that all energy provided by a system is not wasted. Even with with no solar panels to the system connected to the system it stores mains power when it is cheap and feeds to the house utilities when the power is most expensive thereby saving the customer up to 65% on the electricity bill.

Battery Material

Combining both solar and LED technology different materials have different impacts on the discharge rate and the lifespan of the product. For example, lithiumion batteries can discharge 70%-90% of the total amount of storage while lead-ac- id can only discharge around 50%. And lithium-ion batteries have at least double the lifespan of lead-acid

batteries. Higher discharge rate and longer lifespan will typically results in higher prices.

Capacity

Storage capacity refers to the total amount of energy your solar battery can store, and usable capacity means the amount one can use, which is usually calculated by depth of discharge (DoD). The amount of storage capacity and usable capacity, measured in kilowatt hours (kWh), directly influences how much your solar battery storage system will cost. Larger capacity means it can store more energy and support a larger area, thus, it will result in a higher price.

Lifespan

The life cycle is an important indicator of a solar battery storage system's lifespan. Themore cycles a solar

battery can provide, the longer time it can perform normally. Considering the lifespan of solar panels is around 25 years, replacing a new solar battery may add up to the future costs.

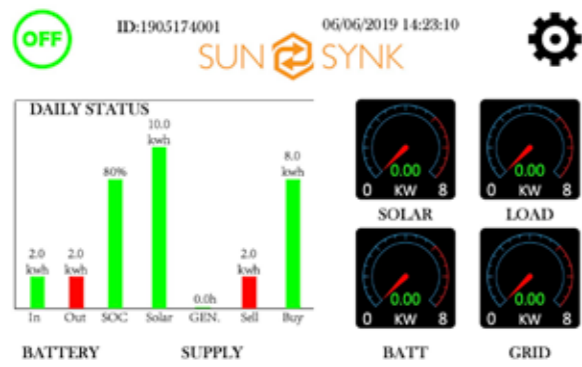
Installation

Installation cost of solar battery storage systems varies slightly based on the size. It may be covered by the solar battery storage system costs of some brands. Generally speaking, it is more economical to set up your solar battery system while installing solar panels.

What Is the Lifespan of a Solar Battery?

The average lifespan of a solar battery storage system is around 5 to 7.5 years for leadacid and 11-15 years for lithium-ion batteries. However, all batteries are vulnerable if they are over-discharged or exposed to extreme weather.





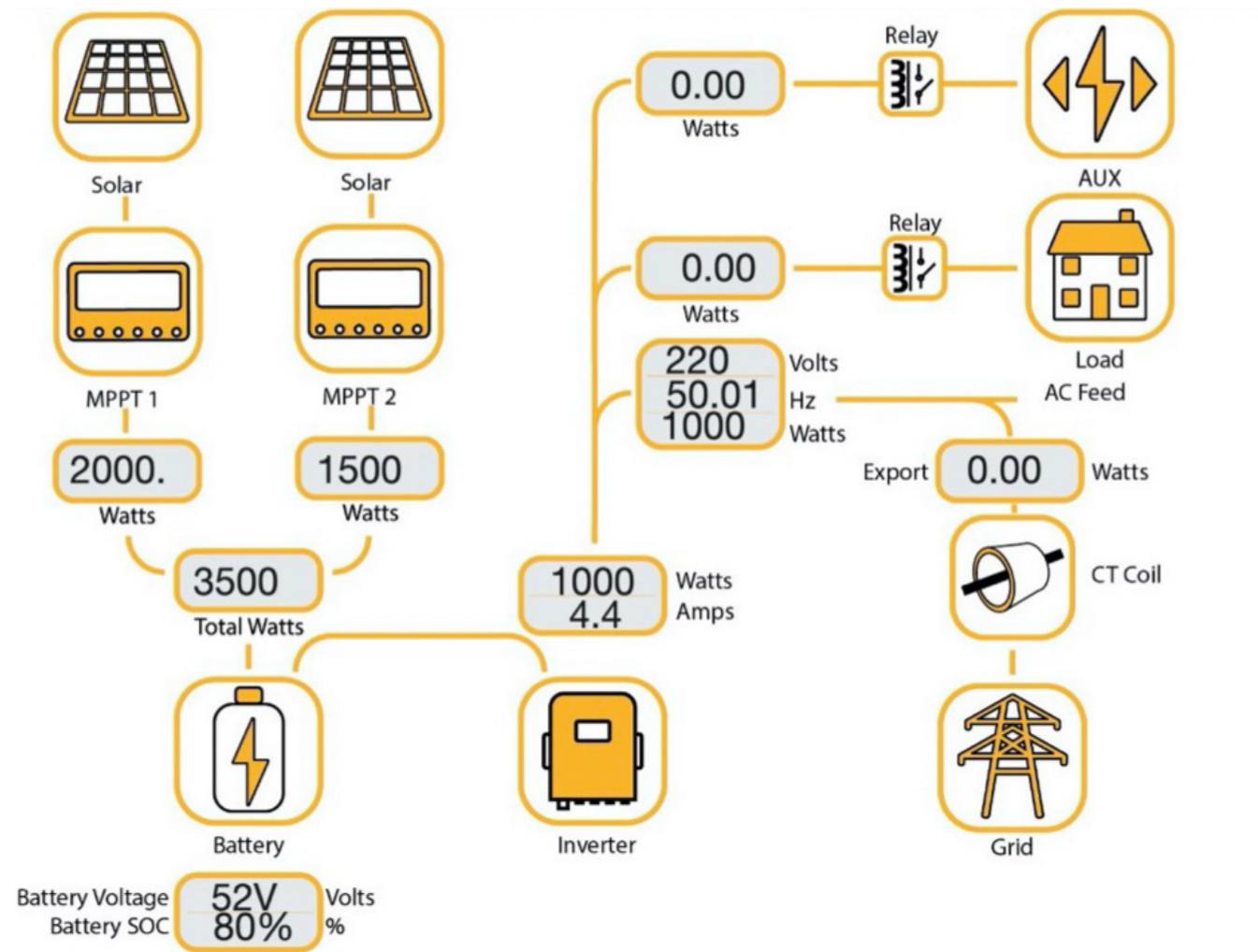
Above is a pic of the home screen of our parity inverter



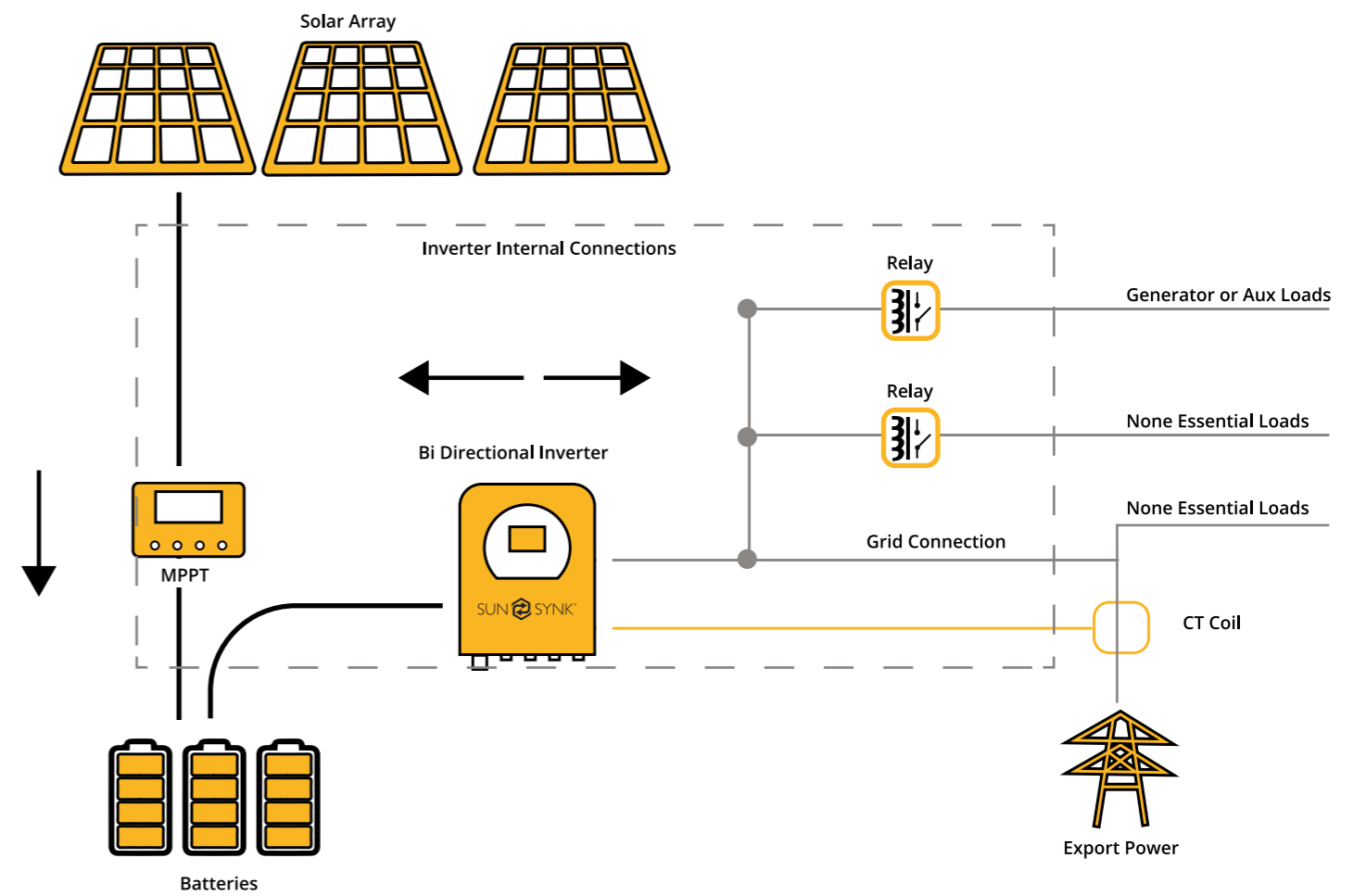
Two inverters wired together



The system Flow Screen from our Inverter



What Can You Power



System	Based on 5 Sun Hours	Power over 24 Hour	Power over 12 Hour	No AC Units
1kW	8,000 Watts	300 Watts	600 Watts	None
8kW	40,000 Watss **	1.6kW	3.2kW	Two
18kW	90,000 Watts	3.75kW	7.5kW ***	Five
24kW	120kW	5kW	10kW	Ten

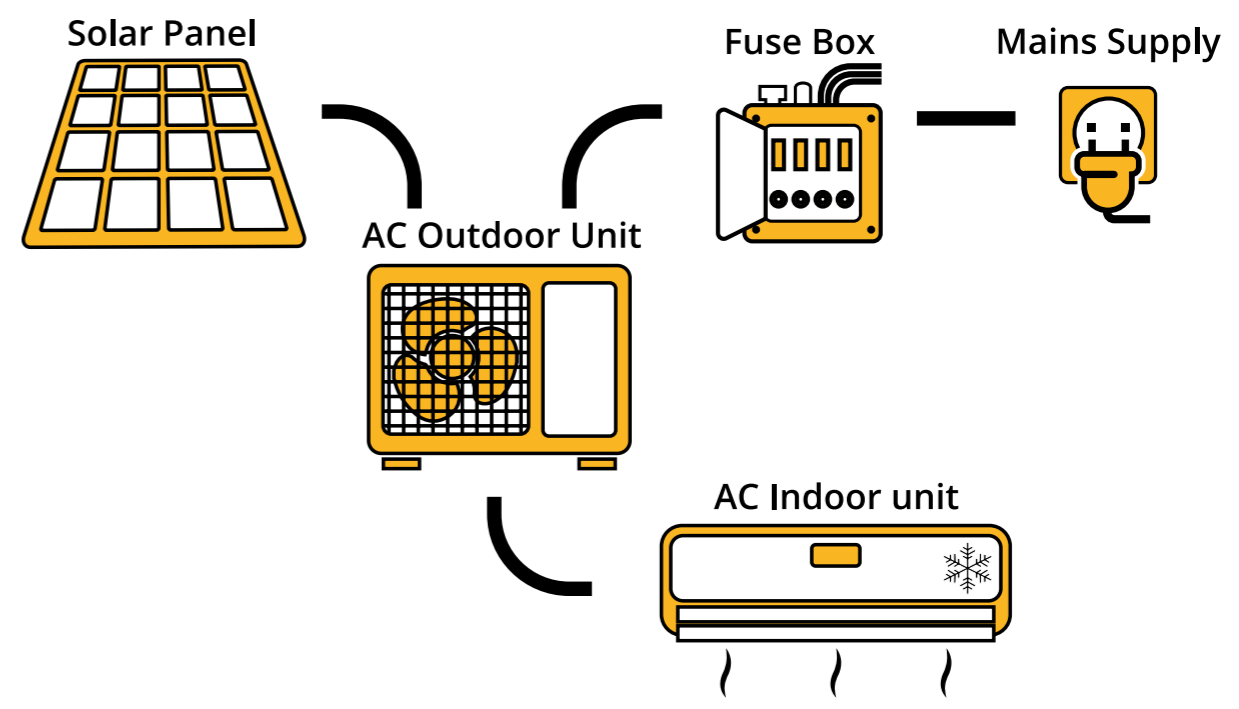
** Same as a large UK house requires
 *** Power need to charge a Tesla Car



Solar Air Conditioners

The Hybrid ACDC Solar Air Conditioner does not require any battery, and just need a few solar panels to deliver huge saving. During the sunshine day, when air conditioner is need-

ed at the most, you can operate this unit up to 100% by solar panels. When night comes it will automatically switch to AC power.





Performance

The ACDC Hybrid Solar Air Conditioner is different as the regular DC inverter air conditioners. During the day, it runs directly on DC power from solar panels. With the intelligent Power Management system.

The Solar Air conditioners can directly connect to the solar panels, it does not need an inverter, controller or battery.

BTU Rating	Square Feet of Cooling	Square Metre of Cooling
5,000	Less Than 150	Less than 15
6,000	150–225	15 - 22
7,000	225–300	22-30
8,000	300–350	30-35
10,000	350–500	35-50
12,000	500–650	50 - 65
14,000	650–875	65-87
18,000	875–1,100	87-110
21,000	1,100–1,300	110 - 130
25,000	1,300–1,600	130 - 160
29,000	More Than 1,600	Over 160

As a rule of thumb, an air conditioner needs 250 Btu for each square metre of living space. But other considerations, such as the ceiling height and the size of your windows and doorways, might call for more cooling power. To measure your room, multiply the length of the room by the width.

Room 9.3 Metre x 4.2 Metre = 39 M2 x 250 = 9,700 BTU AC to cool the room.

Too Small BTU units for your room / house will continually run, just to try to keep up. This will increase your and it is unlikely the unit will be able to cool the area effectively.

Specification

	9000 BTU	12000 BTU	18000 BTU	24000 BTU
Model Number	SSACNB-09K	SSACNB-12K	SSACNB-18K	SSACNB-24K
Indoor Fan type	BLDC	BLDC	BLDC	BLDC
Indoor Fan Consumption W	18w	18w	40w	40w
Indoor Fan Speed (Turbo/High/Mid/Low)	1200/1100/1000/850	1300/1200/1100/950	1050/950/900/800	1350/1250/1150/1000
Indoor Fan Air Flow m3/h	485/434/382/305	536/485/434/357	971/864/808/700	1250/1120/1000/850
Indoor Noise Level dB(A)	41.7/38.8/33.0/31.6	44.6/42.6/36.3/35.0	44.3/41.5/38.8/36.8	51/50/47/42
Indoor Evaporator Row	2	2	2	2
Indoor Pipe Diameter	Φ7	Φ7	Φ7	Φ7
Outdoor Fan type	BLDC	BLDC	BLDC	BLDC
Outdoor Fan Consumption W	40w	40w	55w	75w
Outdoor Fan Speed r/min	850	880	880	850
Outdoor Condenser Row	1	1	1.5	2
Outdoor Pipe Diameter	Φ7	Φ7	Φ7	Φ7
Outdoor Fan Air Flow m3/h	1800	2000	2200	3320
Outdoor Noise level dB(A)	≤52	≤52	≤55	≤58
Pressure Mpa (Gas/Liquid)	4.3/1.1	4.3/1.1	4.3/1.1	4.3/1.1
Connecting Pipe size (Gas/Liquid) Inch	3/8 1/4	3/8 1/4	1/2 1/4	1/2 1/4
Connecting Pipe Max Length M	15	15	20	25
Connecting Pipe Max Height M	8	8	10	10

Weight

	9000 BTU	12000 BTU	18000 BTU	24000 BTU
Model Number	SSACNB-09K	SSACNB-12K	SSACNB-18K	SSACNB-24K
Cool & Heat	Cool & Heat	Cool & Heat	Cool & Heat	Cool & Heat
Suitable Room Square Meter	15 Less	15-25	20-30	32-42
Outdoor Suitable Temperature °C	-15 to 56	-15 to 49	-15 to 49	-15 to 49
Indoor Setting Temperature °C	16 to 32	16 to 32	16 to 32	16 to 32
Cooling Capacity Btu	9000(3400-12180)	12000(3400-12911)	17000 (4100-18776)	22000 (8500-24907)
Cool Consumption W	681(200-1120)	1096(210-1430)	1553(200-1994)	2009(470-2600)
Heating Capacity Btu	11942(2700-12191)	13648(3400-15989)	16377 (4100-17742)	23000 (10200-24566)
Heat Consumption W	1045(160-1162)	1143(170-1295)	1476(235-2080)	2360(410-2358)
EER(W/W) (BTU/W)	3.87/13.21	3.2/10.90	3.2/10.90	3.20/10.90
COP(W/W) (BTU/W)	3.35/11.42	3.40/11.6	3.2/10.90	3.20/10.9
Dehumidifier L/h	1.3	1.5	2.1	2.3



Harbour Systems

With the Sunsynk Hybrid Inverter system

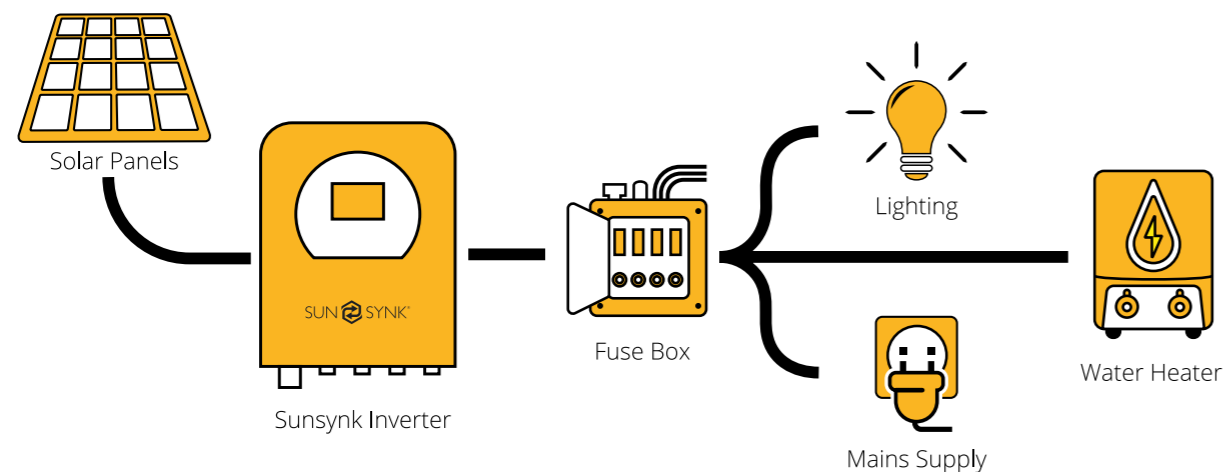
The Sunsynk inverter can power all kinds of appliances in the home or work place including motor-type appliances such as tube lights, fans, refrigerators and air conditioners. It works rather like a water tank when storing electricity in that you fill the tank up from a generator or solar array and silently use the power until the tank is empty or close to empty. Subsequently, it can be topped back up again by the generating facilities.

The Sunsynk® range of solar products is the culmination of years of research and development, this inverter is one of our newest products. This device combines the functions of inverter, solar charger and battery charger to offer uninterrupted power support in a convenient size. Its

comprehensive LCD display offers users configurable and accessible button operation to adjust functions such as battery charging current, AC/Solar charger.

There is a very real advantage in using the Inverter on a generator system as it will assist greatly in reducing the consumption of diesel. The generator simply runs for a period of time and the power is sent through the inverter to the user.

At the same time the inverter stores power so that when the batteries are full, the inverter can stop the generator and the power source is switched to the batteries.



Simple to install and can provide power any where any place.

Solar panels	Solar Panel Fixing Kit	Inverter	Battery	Wiring & safety kit
100 Watt	100 Watt	3.5KW	5KW AGM (Min 4)	Battery Isolator
270 Watt	270 Watt	5.5KW	5 KW Lithium	1 Way Combiner Box
320 Watt	320 Watt	8.8 KW 2		Easy commoner box
				Mains surge protector
				20 Metre Solar panel hook up

Select Your Solar Panel (min 6 per system)

Our Solar Panels are made of polycrystalline silicon and once integrated with our inverters will turn sunlight into electricity that can be used in your home or business.

They can be mounted on individual fixing kits or onto large frames and once functioning, they will continue to provide power for over 25 years.



100 Watt Solar Panel

Polycrystalline Solar Panel
Size: 678 x 1008 x 35mm
Weight: 8.2kg

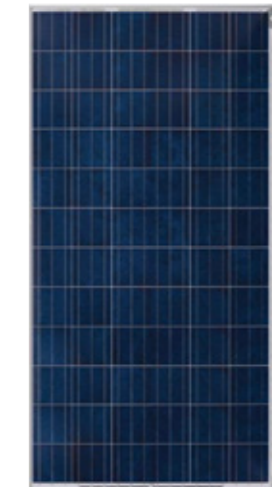
Order Code: SUN100PAN



270 Watt Solar Panel

Polycrystalline Solar Panel
Size: 1640 x 992 x 35mm
Weight: 18.6kg

Order Code: SUN270PAN



320 Watt Solar Panel

Polycrystalline Solar Panel
Size: 1956 x 992 x 40mm
Weight: 23kg

Order Code: SUN320PAN



Solar Fixing Systems

In order to install a working PV system, Sunsynk supply fixing kits, which are matched our solar panels however, should smaller panels.



Select your Inverter

Main Features

- Maximum efficiency of 97.5% with wide input range
- Double MPPT design with precise MPPT algorithm
- Natural cooling- IP65 protection
- Compact and light design for easy installation
- Transformer-less GT technology ranging from 2.5kW to 4.8kW
- It carries a weatherproofing rating of IP65 and is fitted with 2 x MPPT ports



Hybrid Grid Tied Inverter with Storage

Max PV Power	3600W
Rated DC Power	3600W
Max DC Voltage	500V
MPPT Voltage Range	125~480V
Starting Voltage	125V
Input Lines	1+1
Battery Type	Lead-Acid or Li-ion Battery
Battery Rated Voltage	48V
Rated AC/DC & Reserve Power	3600W
Max AC Power	3960W
Peak Power (off-grid)	1.5 Times Rated Power, 10s
AC Output Range	230Vac
Off-grid Output	45~55H/55~65Hz 180~270Vac 230Vac±2%



Hybrid Grid Tied Inverter with Storage

Max PV Power	5500W
Rated DC Power	5000W
Max DC Voltage	500V
MPPT Voltage Range	125~480V
Starting Voltage	125V
Input Lines	1+1
Battery Type	Lead-Acid or Li-ion Battery
Battery Rated Voltage	48V
Rated AC/DC & Reserve Power	5500W
Max AC Power	5500W
Peak Power (off-grid)	1.5 Times Rated Power, 10s
AC Output Range	230Vac
Off-grid Output	45~55H/55~65Hz 180~270Vac 230Vac±2%



Hybrid Grid Tied Inverter with Storage

Max PV Power	8800W
Rated DC Power	8000W
Max DC Voltage	500V
MPPT Voltage Range	125~480V
Starting Voltage	125V
Max DC Current	17A/17A
Input Lines	2+2
Battery Type	Lead-Acid or Li-ion Battery
Battery Rated Voltage	48V
Rated AC/DC & Reserve Power	8000W
Max AC Power	8000W
Peak Power (off-grid)	1.5 Times Rated Power, 10s
AC Output Range	50/60Hz; 120Vac & 230Vac
Off-grid Output	45~55H/55~65Hz 180~270Vac 230Vac±2%

The are several advantages of the Sunsynk Parity Inverter.

These can be summarised as; It can be programmed to store mains power when the mains grid is at its cheapest. It will manage the amount of DC power stored into the batteries. The batteries will not be allowed to run below their DoD. The inverter can be programmed to act as an Uninterrupted Power Supply. It combines several func-

tions within one shell such as charge controller, inverter, battery charger, programmable power management and uninterrupted power supply. Its convenient LCD display offers the user a configurable and accessible button operation and once the Wifi dongle has been attached the user can monitor and adjust remotely the inverter's functions to make the most of installed power generation and storage.

Inverter Monitoring System

WI-FI: SSWIFIPK - GSM:GPRS_IPK

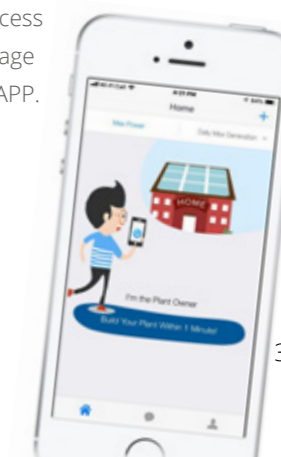


The ability to collect information from the inverters remotely has made the monitoring of PV systems more efficient than ever before. The Wi-Fi or GSM module ensures stable and efficient monitoring of a user's Solar power system

It measures by collecting information from inverters such as status and performance, data collecting devices make the long-term monitoring of PV systems feasible and efficient. The Wi-Fi or GSM module can ensure the stable and efficient performance of PV systems, while minimising the monitoring costs as well, therefore enabling

users to achieve great increase in ROI with only a little investment. It monitors your inverter throughout its entire life-cycle. You will receive detailed information on your inverter including the energy used that day. You will also receive monthly, yearly energy and total energy updates through its wireless communication with your router to the internet by an smart Wi-Fi plug.

You can easily access the monitoring page via PC or phone APP.



Select your Batteries

Lead-acid vs. Lithium Battery Comparison

Different materials have different impacts on the discharge rate and the lifespan of the product. For example, lithium-ion batteries can discharge 70%-90% of the total amount of storage while lead-acid can only discharge around 60%. Lithium-ion batteries have at least double the lifespan of lead-acid batteries. Higher discharge rate and longer lifespan will typically results in higher prices.

Lithium Phosphate Batteries 5,000 Wh 48V



Lithium Phosphate Batteries

Cell	100Ah, LFP	Max. discharging current peak	200A, (2C, 30s, 25°C ± 2°C)
Module	1P16S		SOC ≥ 40%
Rated energy	5.12Vdc	Communication	CAN/RS485
Rated voltage	51.2Vdc	Rated energy	5.12Vdc
Working voltage range	44.8~58.4 Vdc	Dimension (LDH)	440* 530* 132mm
Rated charging/discharging current	0.5C	Weight	~50kg
Max. Dis-charging current	1C (100A)	IP Level	IP20

Order Code: Sunsynk-100 AH-345789

AGM Batteries 2,500 Wh 12V (Need min 4)



LAST LONGER THAN NORMAL LEAD ACID

Unlike a flooded wet-cell lead acid battery, these batteries do not need to be kept upright. Gel batteries are maintenance free since it is a sealed battery and no emission of gasses occurs so the volume of electrolyte released is minor. This means that a gel battery lasts 2-3 times longer than a normal flooded battery.

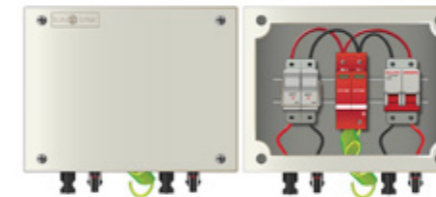
With our solar systems we recommend the use of the gel batteries due to their stable properties. A modern gel battery is a Valve Regulated Lead Acid (VRLA) battery with a gelified electrolyte. The sulphuric acid is mixed with fumed silica which makes the resulting mass gel-like and immobile.

Another advantage is that gel batteries are more acid-starved than other batteries which protects the batteries' plates. This makes gel batteries the best suited for deep discharge applications. The ideal gel battery supplied by Sunsynk® is the 12V 200Ah gel battery.

Lithium-Ion Batteries

Order Code: SUN-200AH

Protection devices for use with Sunsynk Inverters and Batteries



Combiner Box & Lightning Protector:

This is used in between the solar panel and the inverter to protect the inverter

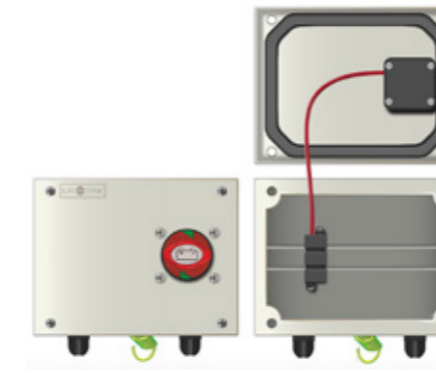
Order Code:



Mains Surge protector & isolator:

This is used in between the solar panel and the inverter to protect the inverter

Order Code:



Battery Isolator and Fuse:

This is connected between the inverter and the battery to safely isolate the battery and offer overload and short circuit protection.

Order Code:



Solar Phone Chargers

Portable energy, anywhere anytime.

Lightweight and portable solar panels made from polycrystalline silicon are waterproof, scratch and UV resistant with built-in USB socket that can charge mobile phones or mini-power banks. The panels are durable and can withstand everyday wear-and-tear. The panels are durable and can be stood on or dropped and still work

fine. In direct sunlight it will take 5 hours to charge the average smartphone.

Features

- Portable
- Includes USB charger output
- LED charge indicator
- IP65



Flex Solar Charger Includes:

- 2W laminated polycrystalline silicon
- 15.2 x 11.9 x 0.2cm
- USB port
- LED indicator light

Order Code: F2WPC



Solar Charger Includes:

- 5W glass polycrystalline silicon
- 15.2 x 11.9 x 0.2cm
- USB Port
- Hook hole to hang up
- LED Indicator Light

Order Code: 3WPC



Solar Charger Includes:

- 2W glass polycrystalline silicon
- 16.8 x 14 x 1.7cm
- Frame with stand
- Hook hole to hang up
- 3 metre cable

Order Code: 2WPC



Solar Charger Includes:

- 10W glass polycrystalline silicon
- 16.8 x 14 x 1.7cm
- Frame with stand
- Hook hole to hang up
- 3 metre cable

Order Code: 10WPC



Pocket Power Station

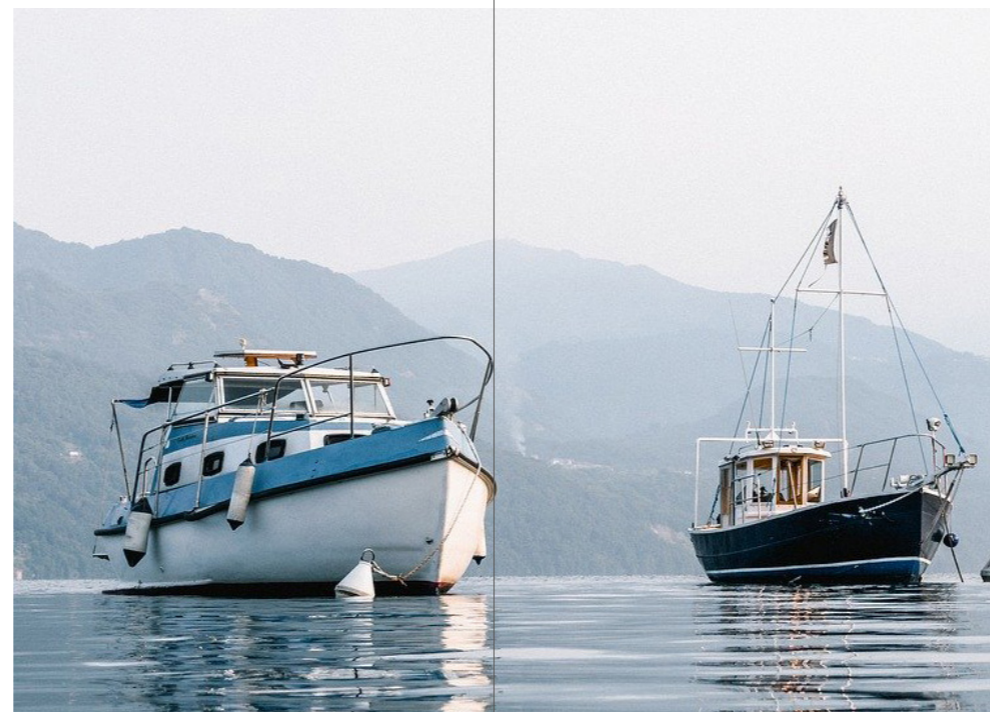
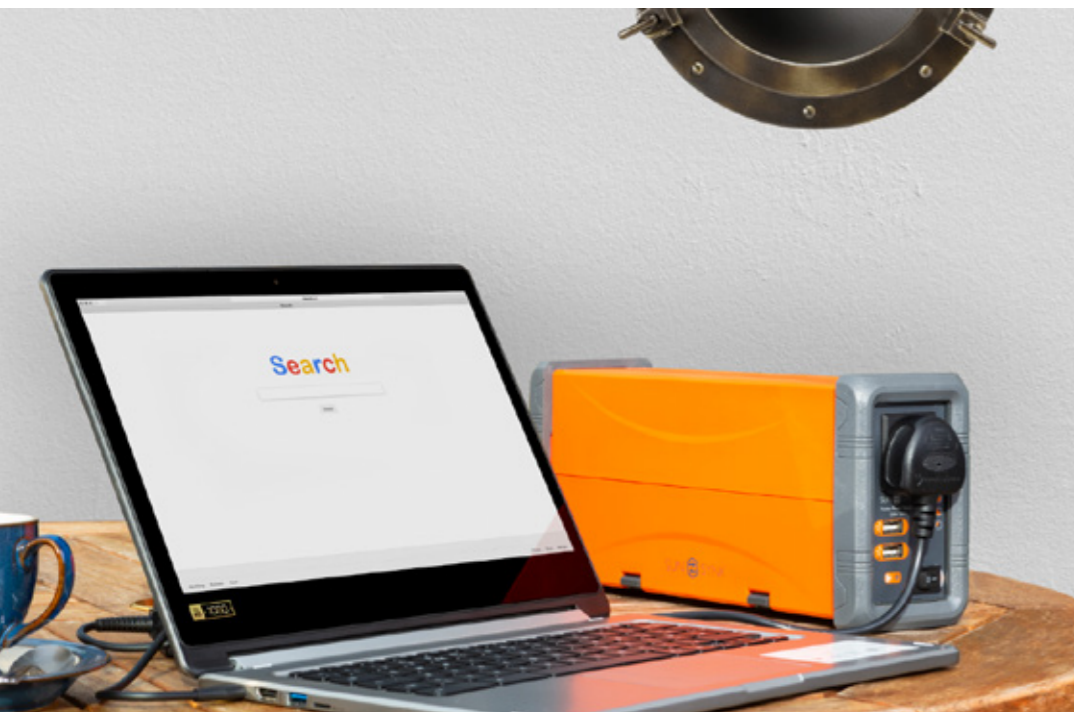
Power To Go

A portable power device; the Sunsynk Pocket Power Station has similarities to other power packs in its outlook, however underneath its shockproof shell is a totally different device which can provide mains power to 3-4 devices for 5 hours once fully charged.

FOR ENVIRONMENTS WHERE MAINS POWER IS NON-EXISTENT

It comes in two versions that deliver either 110V or 230V AC power. It can be charged by either solar panels, mains power or DC battery power.

The Pocket Power Station 1 (with 1 battery pack) can deliver 150W for one hour or 40W for four hours. The Pocket Power Station 2 (with 2 battery packs) can deliver the same for double the duration.



PPS1 Kit:

- 100 Watt 230V/110V light
- 100Wh rechargeable li-ion battery
- Mains charger & USB charging cable
- Carry case
- Includes standard 150Wh battery pack x 1 (x 2 for PPS2) Larger size battery packs are optional.
- PPS1 Includes rapid charge mains adapter, 2 x USB charging cable (optional solar panel for charging).

Order code: PPS1

PPS2 Kit:

- 200 Watt 230V/110V light
- 200Wh rechargeable li-ion battery
- Mains charger
- PPS2 is a 300W Inverter.
- Carry case
- Includes standard 150Wh battery pack x 1 (x 2 for PPS2) Larger size battery packs are optional
- PPS2 Includes rapid charge mains adapter, (optional solar panel for charging).

Order code: PPS2



DC Light Kits

Have light anywhere and anytime with our solar powered Light Kits. They come with their very own power banks.

No mains power is required. Easy to set-up, plug-and-play. No electrical knowledge required. Lightweight, with a built-in li-ion battery. The power banks are charged by solar panels. Each kit comes equipped with either 2 or 4 lights attached to 3 metre cables with in-line switches.

Consistent current, good stability with illumination maintained above 300 lumens per lamp. East-to-see battery status plus extra USB outlets for charging mobile phones. No mains power is required. Easy to set-up, plug-and-play. No electrical knowledge required.

DC 2 Light Kit Includes:

- 60,000 mWh li-ion battery pack
- x2 300 lumen LED light bulbs
- 5 metres of cable (plus DC jack)
- 5W silicon solar panel
- Lamp hooks

Order code: DC 2 LIGHT KIT

DC 4 Light Kit Includes:

- 90,000 mWh li-ion battery pack
- x4 300 lumen LED light bulbs
- 5 metres of cable (plus DC jack)
- x2 5W silicon solar panel
- Lamp hooks

Order code: DC 4 LIGHT KIT



USB Light Bulb

3 Watt light fitting with 3-metre cable with built-in, in-line switch and DC Jack. It is portable & lightweight includes 3 meter cable.

3W LED Light Bulb

Lumens	300
Colour	White
CRI	85%
Colour Temp	5400K



Solar Floodlight Compact

Tough little fittings

The Compact solar Floodlight is tough, bright and resilient. The light is designed for simple plug and play installation and can operate in almost all weather conditions which makes the light useful in places where there is no mains available.

The compact solar floodlight uses its solar panel that charges the battery during the day. Once the sun goes down the light automatically activates itself into standby mode ready for motion detection. The lights motion sensor can detect movement up to

10 Watt Solar Flood Compact

Includes:

- Built-in polycrystalline solar panel
- 600 lumen compact floodlight
- 10 Watt
- Built-in PIR
- LED indicator light

Order Code: 40342255

8 meters away which gives security in the most remote areas.

Features:

- Dimensions -11 x 16 x 12.5cm
- PIR with a 120° range
- Beam range 8-10 metres
- Silicon solar panel included
- Compact (all-in-one)
- Micro-processor based
- Galvanised steel brackets (rust-proof)
- Marine grade construction
- Long shelf-life
- Easy to install

20 Watt Solar Flood Compact

Includes:

- Built-in polycrystalline solar panel
- 1200 lumen compact floodlight
- 20 Watt
- Built-in PIR
- LED indicator light

Order Code: 40342225





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