

**SEGEN STORAGE  
GUIDE FOR  
INSTALLERS**

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# Need Reliability? The solution is...

**solis**  
inverters



Solis Inverters provide two solutions for your residential storage requirements. Installers familiar with Solis's broad range of sting inverters will find moving into storage seamless with both the RHI and RAI solutions.

- **Solis RHI Hybrid Inverter:**  
Dual MPPT Hybrid Inverter,  
3/3.6/4.6/5kW, Off-Grid, Backup
- **Solis RAI AC Coupled**  
AC Coupled Charge Controller,  
3kW, Quick and Easy Install
- **Battery Compatibility - Pylon Tech / BYD**
- **APP/Webportal - Remote Upgrade/Monitoring**



Contact us today

t: +44 (0) 113 328 0870

e: [uksales@solisinverters.com](mailto:uksales@solisinverters.com)

Stock Code: **300763.SZ**



## Welcome

Battery storage is key to the future of PV – and as always, we are here to help.

Throughout this document you will be guided through everything you need to know, including:

- Why sell storage?
- Types of storage system
- Battery sizing
- Transport and storage
- Compatibility

There is also an overview of the Segen [storage portfolio](#), including exclusive Kits and Packages.

Before you get going – we would recommend you review the following documents:

- [Pre-sale Checklist](#)
- [Grid Connection Requirements](#)
- Review the IET Cod of Practice for [Electrical Storage Systems](#)
- EREC Compliance Requirements [G98/G99](#)

Should you have any questions, please don't hesitate to contact your account manager.

# Why Sell Storage Solutions?

Customers are becoming more aware of their energy costs and are looking at cost-effective solutions to not only make savings but to minimise their reliance on the grid.

## Solar storage benefits include

**Power when you need it** – make sure the energy they generate is the energy they use. A battery will store energy the PV system generates throughout the day, for use when they get home from work or once the sun's gone down.

**Energy security** – ensures they still have access to electricity even if the grid is down.

**Lower energy bills** – timely use of PV generate energy means homes will be drawing less electricity from the grid, protecting them from rising energy prices.

**Environmental** – energy generated using photovoltaic technology creates less pollution than fossil fuels during their comparative lifetime uses.

**Visibility** – energy consumption monitoring allows end users to see where and how much they could save.

**Future proofing** - as we start to see the introduction of electric vehicles, future proof your home to ensure its ready to cope with new technologies.



**RELIABILITY  
CREATES VALUE**



With the ADVANTAGE of vertical industrial chain from lithium cells to modules integration with its own BMS Technology, Pylontech has been delivering LFP battery over 6 years for Residential, Commercial and Industrial ESS application.

 **DIY your systems flexibly with Pylontech modules.**

# Types of Storage System – DC Coupled

DC coupled storage is connected to the DC side of a PV system, directly between the PV modules and the inverter's DC input. These types of systems monitor energy levels within the household and will use any surplus energy to recharge the batteries during the day and discharge them during periods when energy consumption levels are higher than energy production levels.

When planning a DC coupled storage system extra care should be taken to ensure the storage inverter and the PV inverter are suitable to be installed together.

A normal string-connected storage inverter would not be suitable for use with a SolarEdge PV inverter for example, as this would cause issues with the optimiser technology.

Only SolarEdge's StorEdge Interface would be compatible, which could then in turn be connected to an LG Chem battery.

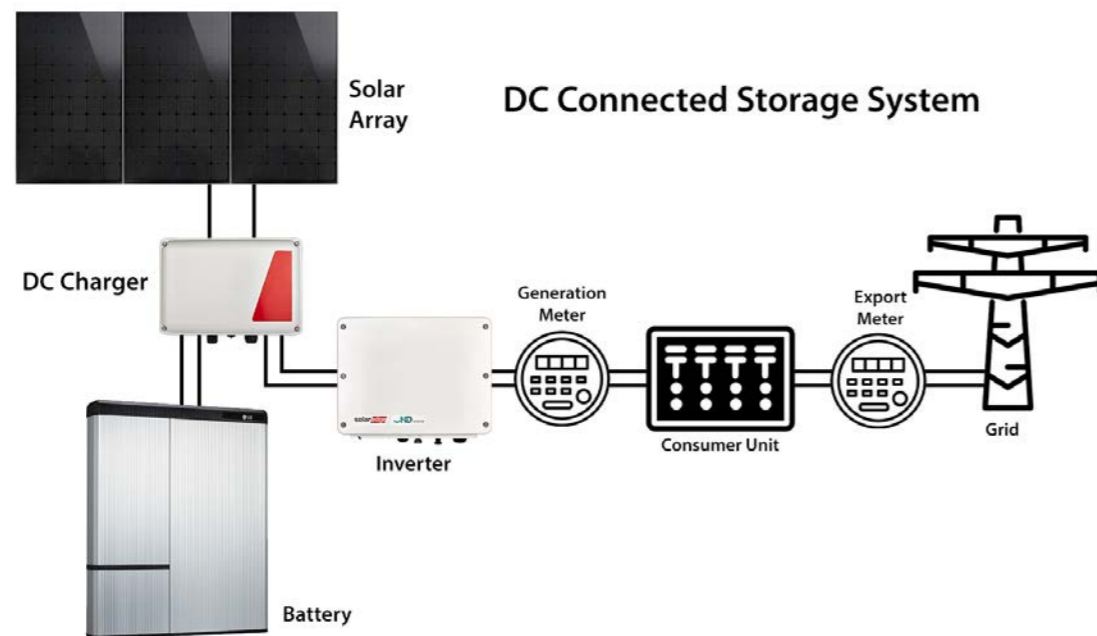
Manufacturer compatibility documents can always be checked to ensure suitability between PV inverters, storage inverters and batteries.

Due to the reliance of DC coupled storage on

surplus PV generation being available to charge the batteries, it's crucial that the process of sizing the battery is undertaken carefully, and with the specific properties electrical loads and usage profile taken into consideration.

During Winter when production falls, oversized DC coupled batteries can be at risk of remaining at low charge for extended periods of time and this can lead to degradation of the cells and a reduction in efficiency and longevity – reinforcing why it's vital to take appropriate case during the planning process.

Even small batteries can remain uncharged on large PV systems if the consumption levels remain consistently higher than production levels throughout the day.



# Types of Storage System – AC Coupled

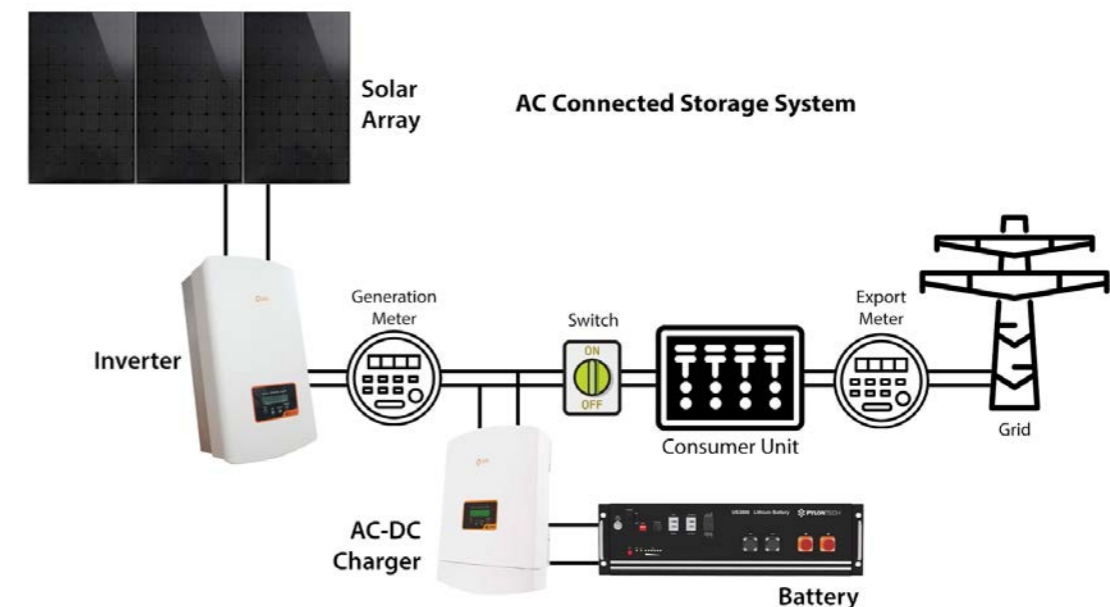
An AC coupled storage system still requires a DC battery, but this battery is located on the AC side of the property. In this set-up a battery will be connected to an AC coupled inverter, which acts in reverse of a normal PV inverter, converting AC to DC so that it can be stored by the battery. AC energy can be supplied from the grid or from an existing PV inverter on the property, depending on what mode of operation the system is running in.

Energy is subject to conversion losses during the charge and discharge process, but these losses are minimal, only working out at around 5-7% more than their DC coupled counterparts. Despite the higher losses AC coupled storage systems are still very popular due to the flexibility they grant installers and end users when it comes to the planning, installation and operation of their storage systems.

For example, when proposing DC coupled storage you should remember this must be connected to the PV inverter's DC strings. If the existing PV inverter has been installed in a loft, this environment will likely be unsuitable for a storage system whether that be due to space, temperature or ventilation. AC coupled storage on the other hand does not need to be connected on the DC circuit between inverter and panels so suffers from no such restrictions.

The fact that an AC coupled storage system can be charged completely with energy supplied by the grid means that the property doesn't even need a PV system. This in turn provides far greater freedom when it comes to sizing batteries for the property, as you are no longer limited by sizing in line with surplus PV energy. Because no PV system is needed in the first place, it is irrelevant as to what is installed on the DC side as compatibility does not need to exist between the PV inverter and the AC storage inverter.

Unfortunately, this does come with a caveat, as the AC storage inverter is considered its own PPM (Power Park module) meaning that when installed in conjunction with an existing PV inverter, the net capacity of site includes the rated AC output of both units. This often pushes site capacity above 16A/3.68kW per phase and as a result requires the submission of a G99 application prior to installation.



# Types of Storage System – Hybrid

We have discussed DC and AC coupled storage and their respective advantages and disadvantages, but to summarise:

	ADVANTAGES	DISADVANTAGES
DC	<ul style="list-style-type: none"> <li>Often cheaper for small systems – equipment and install</li> <li>High efficiency</li> <li>Can avoid G98/G99 application process if rated AC output of existing system is unaffected</li> </ul>	<ul style="list-style-type: none"> <li>Compatibility required between battery, string connected DC charger and PV inverter</li> <li>Potential storage capacity is restricted to volume of potential surplus PV energy</li> <li>Must be installed on DC side of inverter – may be hard depending on location of existing inverter</li> </ul>
AC	<ul style="list-style-type: none"> <li>Can be charged with energy supplied by a local PV system(s) or the grid. Meaning greater flexibility when planning storage capacity.</li> <li>More flexibility proposing location of storage system within the property</li> </ul>	<ul style="list-style-type: none"> <li>Is considered an individual PPM and so permission must be sought from the DNO under the relevant classification depending on aggregate AC output of combined PPM's installed.</li> <li>Can often be more expensive due to the requirement for the AC coupled inverter</li> </ul>

Hybrid inverters combine many of the advantages offered by AC and DC coupled storage to offer a solution that is both flexible and cost-effective.

A Hybrid inverter is a PV inverter and battery charger rolled into one unit.

Batteries are still connected on the DC side but can be charged from the AC supply, this means there are fewer restrictions when it comes to battery sizing as there are when only working with surplus PV energy. Also, regardless of the battery capacity, your system size is determined by the rated AC output of your Hybrid inverter.

A good example would be the SolaX 10kW 3PH Hybrid inverter; When connected to a 3PH supply this inverter will push out just over 3.3kWh per phase, meaning that it can be connected under G98. However, you can connect up to 4 x 6.3kWh Triple Power SolaX batteries to that inverter for a total of 25kWh's storage capacity. And despite this capacity, the system will only need to be compliant to G98 because the rated AC output of the SolaX hybrid determines what can be exported back to the grid.

Combining this technology inside one machine reduces the cost of equipment and labour whilst speeding up the time it takes to install. As all the processing power is taking place inside one unit there is no need to worry about compatibility between equipment, which saves one more headache during the planning stage.

The big disadvantage of most Hybrid inverters is that they are first and primarily PV inverters and as such, require PV in order to energise and operate. Additionally, if there is an existing PV system on a property looking for storage, you may have difficulty attempting to justify the removal of a working PV inverter to replace it with an equivalent Hybrid. Which is why for existing systems it may be wise to consider a retrofit, for new storage enquiries a Hybrid solution offers the most advantages.

# Battery Sizing Considerations

The choice of battery type and size is not a simple decision, there are many factors to consider. We always recommend that a comparison is made and a look at the total cost over the life of the system as simply choosing the lowest initial cost option in many cases can be more expensive over the life of the system.

This table describes some of the factors that must be considered when determining battery size:

Attribute	Comments																																																		
Essential Load Energy Usage	<p>For a grid-backup solution the most important thing to consider is the loads that need to be supported when the grid has failed. It is not generally practical to consider powering all the loads in the property, e.g. an electric oven will consume considerable amounts of electricity and would require a very large battery to run even for a short time. A good way to consider this is to generate a list of essential energy loads to be backed up and the amount of time they're needed in a typical day. An essential load is basically something energy must always be available for. This could be something normal like a freezer or burglar alarm, or something site specific like a fish tank. If no power was available, would it lead to loss of fish or just defrosted ice cream? In the UK, power cuts are relatively rare but for more remote locations or other countries it is definitely worth considering. A lot of loads won't require their maximum power all the time, so you can add a factor to take that into account. Once that's done, you'll have an accurate baseline of energy consumption and be able to consider the appropriate battery capacity.</p> <table border="1"> <thead> <tr> <th>Load</th> <th>Power (W)</th> <th>Time</th> <th>Factor</th> <th>Daily (Wh)</th> </tr> </thead> <tbody> <tr> <td>Lights</td> <td>200</td> <td>5</td> <td>1</td> <td>1000</td> </tr> <tr> <td>Fridge</td> <td>150</td> <td>24</td> <td>0.3</td> <td>1080</td> </tr> <tr> <td>Freezer</td> <td>150</td> <td>24</td> <td>0.2</td> <td>720</td> </tr> <tr> <td>Wi-Fi Router</td> <td>10</td> <td>24</td> <td>1</td> <td>240</td> </tr> <tr> <td>Phones</td> <td>50</td> <td>1</td> <td>1</td> <td>100</td> </tr> <tr> <td>Fish Tank</td> <td>30</td> <td>24</td> <td>1</td> <td>720</td> </tr> <tr> <td>TV</td> <td>170</td> <td>4</td> <td>1</td> <td>680</td> </tr> <tr> <td>Other</td> <td>100</td> <td>24</td> <td>1</td> <td>2400</td> </tr> <tr> <td>Total</td> <td></td> <td></td> <td></td> <td>7690</td> </tr> </tbody> </table>	Load	Power (W)	Time	Factor	Daily (Wh)	Lights	200	5	1	1000	Fridge	150	24	0.3	1080	Freezer	150	24	0.2	720	Wi-Fi Router	10	24	1	240	Phones	50	1	1	100	Fish Tank	30	24	1	720	TV	170	4	1	680	Other	100	24	1	2400	Total				7690
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Battery Operating Time	<p>The next critical decision is to decide the number of hours that the system needs to power the essential loads for. Typically a failure due to a grid fault will typically last for between 1 and 24 hours. The decision on how many hours to allow for is largely driven by the budget available as the cost of the battery pack will be directly related to its size; and its size will be directly related to the number of hours chosen. Usually a system will be sized to support the essential loads for between 12 - 24 hours.</p>																																																		
Space Available	<p>Especially when choosing a lead-acid battery the space available to hold the installed battery and the strength of the floor may be a consideration that imposes a limit on the maximum size of the battery that can be installed. With a Li-Ion battery this is unlikely to be a major concern as a Li-Ion battery will be much smaller and lighter than a similar usable capacity of lead-acid battery.</p>																																																		
Charging Time and Rate	<p>The battery will be charged from the surplus energy available from the PV system, this is the difference between the energy generated by the solar PV system and that used by the loads during the daylight hours. It is therefore important to ensure that the battery can be fully recharged during a typical day of sunlight, especially in the winter months. A battery pack which is too large relative to the PV system will not get fully recharged and therefore not be fully available to provide power in the event of a grid failure.</p>																																																		
Maximum Depth of Discharge	<p>Each battery pack will have a recommended maximum depth of discharge, e.g. lead-acid might be 50% and Lithium Ion might be 90%. Having determined the total energy required to be generated from the battery pack with the equation: 'essential loads energy in 24 hours divided by 24 multiplied by the required battery operating time' then the gross battery capacity needs to be determined by dividing by the recommended DOD. E.g. 7,690Wh / 24 * 12 hours / 90% DOD = 4,27kWh.</p>																																																		

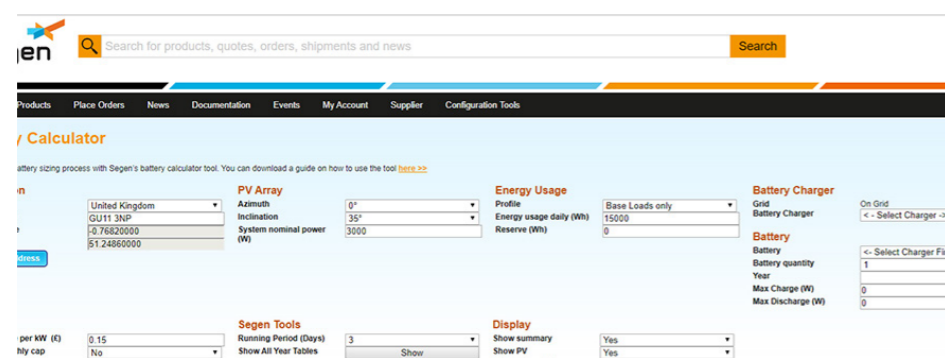
# Segen's Battery Sizing Tool

Calculating the amount of excess energy available for a battery storage system requires an analysis of the hourly energy generation throughout the year and the expected hourly energy usage of the property.

Segen provides a [unique tool](#) that assists in this process by allowing:

- Input of the system size.
- Input of a location near to the target property to enable detailed irradiance calculations.
- Selection of the property load profile from a set of pre-defined examples.

Simply fill in the requested fields and it will generate a detailed summary for the property (either on the page or in a convenient PDF format). There is a guide to using the Segen Battery Calculator on the portal - [download it here](#).



Segen's Battery Calculator tool

Table E - Surplus [Wh]

	01.00.00	02.00.00	03.00.00	04.00.00	05.00.00	06.00.00	07.00.00	08.00.00	09.00.00	10.00.00	11.00.00	12.00.00	13.00.00	14.00.00	15.00.00	16.00.00	17.00.00	18.00.00	19.00.00	20.00.00	21.00.00	22.00.00	23.00.00	24.00.00	Total	
Jan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Feb	-	-	-	-	-	-	-	-	-	-	-	120.11	99.99	790.97	-	-	-	-	-	-	-	-	-	-	-	289.94
Mar	-	-	-	-	-	-	-	-	72.29	247.34	340.70	389.12	434.21	292.70	72.17	-	-	-	-	-	-	-	-	-	-	1848.44
Apr	-	-	-	-	-	-	-	-	142.62	370.10	480.97	497.18	500.40	570.80	434.00	183.18	-	-	-	-	-	-	-	-	-	3251.13
May	-	-	-	-	-	-	-	-	17.54	266.66	510.20	660.96	780.40	541.96	529.30	470.67	255.63	0.47	-	-	-	-	-	-	-	4171.33
Jun	-	-	-	-	-	-	-	-	1.01	279.90	408.20	512.55	664.66	542.41	446.53	271.31	37.69	-	-	-	-	-	-	-	-	4076.72
Jul	-	-	-	-	-	-	-	-	-	274.10	505.59	712.19	900.61	621.02	521.42	383.09	181.79	-	-	-	-	-	-	-	-	4009.27
Aug	-	-	-	-	-	-	-	-	-	238.04	458.30	654.02	719.75	699.80	592.55	429.69	187.70	-	-	-	-	-	-	-	-	3942.66
Sep	-	-	-	-	-	-	-	-	-	10.62	309.08	483.70	444.60	448.81	371.08	178.18	-	-	-	-	-	-	-	-	-	2223.74
Oct	-	-	-	-	-	-	-	-	-	123.11	219.30	316.04	270.11	283.91	120.74	-	-	-	-	-	-	-	-	-	-	1332.39
Nov	-	-	-	-	-	-	-	-	-	-	-	-	30.77	-	-	-	-	-	-	-	-	-	-	-	-	30.77
Dec	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

Table F - Deficit [Wh]

	01.00.00	02.00.00	03.00.00	04.00.00	05.00.00	06.00.00	07.00.00	08.00.00	09.00.00	10.00.00	11.00.00	12.00.00	13.00.00	14.00.00	15.00.00	16.00.00	17.00.00	18.00.00	19.00.00	20.00.00	21.00.00	22.00.00	23.00.00	24.00.00	Total	
Jan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-11699.19
Feb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-10727.82
Mar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-9891.64
Apr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-8657.24
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-7841.18
Jun	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-7657.10
Jul	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-7859.20
Aug	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-6219.02
Sep	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-6090.26
Oct	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-6831.00
Nov	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-11230.95
Dec	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-12169.47

Table G - Battery Charge By Year (1)

	01.00.00	02.00.00	03.00.00	04.00.00	05.00.00	06.00.00	07.00.00	08.00.00	09.00.00	10.00.00	11.00.00	12.00.00	13.00.00	14.00.00	15.00.00	16.00.00	17.00.00	18.00.00	19.00.00	20.00.00	21.00.00	22.00.00	23.00.00	24.00.00	Total	
Jan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jun	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jul	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aug	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sep	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nov	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

The tool will display the expected PV generation values for the chosen location. Table E (Surplus) and Table G (Battery Charge By Year) are particular useful (shown above).

# Battery Storage & Transport

## Temperature

Batteries should be stored and transported in accordance with the temperature range as stated on the data sheet. Battery discharge is affected at different rates depending on temperature. Higher temperatures result in charge being lost rapidly.

Batteries should not be allowed to discharge beyond manufacturer specified limits during storage, considering this it is never advisable to leave batteries in storage for long periods of time. If batteries must be stored for extended periods, you can apply a force charge to keep them above the minimum stated cell voltage which will ensure the battery is ready to be installed when it arrives on site. Allowing batteries to remain undercharged for extended periods will cause degradation of the cells, which will lead to a reduction in the longevity of the unit and inevitably would invalidate the warranty if identified by the manufacturer.

The acceptable duration of which a battery can be left in storage will vary from manufacturer to manufacturer and battery model to battery model. You can often determine this from a label on the battery packaging which may state "Energise by". Alternatively, you can measure the cell voltage or consult the data sheet or seek advice.

Do not let the packaging get wet as this is a barrier for safe transport.

## Insurance

The property owner will need to inform their Insurance provider of the products being installed.

The installer/distributor will need to inform their insurance company of the product, storage and distribution details as they are classed as dangerous goods.

There are many regulations which cover lithium metal batteries and lithium-ion batteries as they are covered under the heading Dangerous goods.

- The regulations are controlled by IATA for air, ADR for road and IMDG for sea.
- They are Class 9 dangerous goods and come under three headings:
- Batteries transported on their own UN3090 UN3480
- Batteries transported with equipment UN3091 UN 3481
- Batteries contained in Equipment UN3091 UN3481

All goods must be considered dangerous even in small quantities and must be handled and labelled accordingly.

As the goods are hazardous goods you need to understand the regulations around how they are handled and what to do in an Emergency.

## Fire Fighting

There are many different ways to deal with lithium ion battery fires. Covering goods with Carbon dust in a circular motion and waiting for up to 2 days for them to go out is usual.

Pouring water over them can be dangerous as water and lithium can ignite.

DO NOT USE Halon as this causes lithium to ignite.

# Alpha•ESS

## SMILE-B3 3kW Single Phase AC Coupled Inverter with Integrated 2.9kWh Battery

The Alpha SMILE B3 is an indoor rated AC coupled all-in-one battery energy storage system (3kW/2.9kWh) suitable for both new and retrofit installations.

Storage capacity can be increased up to 17.4kWh, by adding up to 5x 2.9kWh Parallel Connection Expansion battery modules ALPH-M4856-P. It can control the bi-directional flow of electric power, work under auto/manual & time-of-use (TOU) modes and charge/discharge the battery, as per the homeowners setting.

Battery Size	2.9kWh
Depth of Discharge	96%
Usable Capacity	2.8kWh
Discharge Current	56A
Number of Cycles	10,000
External Battery Expansion	1-5 M4856-P in parallel
Weight (complete unit)	57kg
Warranty - Battery only	10 years



ALPH-SMILE-B3



ALPH-SMILE5-INV

## SMILE5 5kW Single Phase Hybrid Inverter

The SMILE5 is a modular single-phase PV and Battery hybrid inverter with BackUp functionality and built-in UPS function.

It can be connected to up to 6x Alpha ESS parallel expansion battery modules offering up to 34.2kWh storage capacity (when using the 5.7kWh Parallel Connection Expansion Battery) or up to 60.6kWh (when using the 10.1kWh Parallel Connection Expansion Battery). There's cloud monitoring and the modular format can be expanded at a later date.

## Parallel Expansion Battery Modules

Alpha SMILE storage systems offer cloud monitoring, modular format for expansion at a later date, 96% DoD, superb performance and long lifespan.

If connected to the internet the warranty is ten years, if not the warranty is reduced to three years.



ALPH-M4856-P



ALPH-SMILE5-BAT



# Alpha•ESS

## Storion T30 30kW Three Phase AC Coupled Battery Inverter with Cabinet

The Storion T30 is an industrial three phase AC coupled battery inverter that's perfect for any new or retrofit Commercial site.

It can be matched with between 5-12 5.7kWh Series Connection Expansion Battery modules connected in series offering between 28.5kWh and 68.4kWh of storage capacity and up to 30kW of charge and discharge power. All in one cabinet!

Key selling points:

- HV900112 Battery Management System (BMS) – built-in to the cabinet
- EMS Module
- 2 x AC Meters (ALPH-ADL3000-CT) included
- 6 x 80A CTS included to work with the 2 AC meters
- Cloud monitoring
- 3 Year product and 10 Year performance warranty



ALPH-STORION-T30



ALPH-M48112-S



# Rackyrax

## Wall Mounted Battery Cabinets

Mandatory in Ireland if you want to apply for the SEAI grant and requested by end-users everywhere, battery cabinets are an essential part of a battery installation.

Not only do they make battery installations aesthetically pleasing but they also protect the units from accidental access.

Compatible with [Pylontech US2000 and US3000](#) range.



RR-W2-6-G



# Enphase

## AC Battery Storage Module V1.5 - 1.2kWh

Enphase's ACB1.5 is an AC battery which, due to its relatively low weight and size, can be easily installed to the household's AC wiring.

It contains Enphase's microinverter technology to convert between AC and DC internally which offers added safety and efficiency to the installer and system owner.

Key selling points:

- Easily expandable
- Quick to install
- AC coupled for increased compatibility
- Safety tested and certified by TÜV Rheinland

Battery Size	1200Wh
Depth of Discharge	100%
Usable Capacity	1200Wh
Discharge Current	270W max
Number of Cycles	3650
Cycle Efficiency	>92%
Weight	23kg
Warranty	10 years



EN-STORAGE-AC-1.2-V2



# Fox ESS

## H1 3.7kW, 5.0kW Hybrid Inverters

Full of advanced features and compatible with the new HV2600 2.6kWh battery, the hybrid range from FoxESS is a new class of Inverter.

Incorporating a unique heat-sink and cooling fin design that's integrated into the inverter casing to ensure optimal direct contact with heat generating components. The star design on the cooling fin creates a larger surface area which in turn greatly increases the cooling effect. The bespoke Battery management system is designed and manufactured in house, therefore works perfectly with the system as a whole.

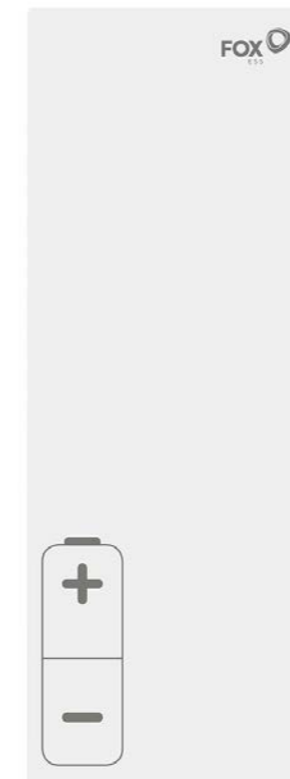


FE-H1-3.7 | FE-H1-5.0

## All-in-One AIO 3.7kW, 5.0kW Inverters

A stylish single phase unit with capacity to house two or four high voltage HV2600 2.6kWh batteries for maximum round-trip efficiency.

The Fox AIO is e P65 so can be installed outdoors for maximum design flexibility and remote monitoring is available via smartphone or web portal.



FE-AIO-H1-3.7-E | FE-AIO-H1-5.0 E





# Fox ESS

## 5.0kW AC Coupled Charger Inverter

Harnessing the power of the sun day and night has never been easier than with the Fox 5.0kW AC-Coupled retro-fit charger.

Full of advanced features and compatible with the HV2600 battery, this is a new class of charger.

Key selling points:

- WiFi stick included
- BMS unit required
- IP65 RATED - suitable for outdoor installation
- Minimum two batteries per system, max. four
- Monitoring - remotely via smartphone or web portal
- Easy installation - plug and play with built-in fuse protection
- 5-years warranty or 10-years if registered online



FE-AC1-5.0



# Fox ESS

## LV5200 5.12kWh 48V Battery Module

The LV5200 is a high-performance, scalable, low-voltage battery storage module capable of discharging at up to 1C, which means it can discharge its entire capacity in one hour. This makes the LV5200 able to supply sudden, high power loads of up to 5.1kW.

Please note: this battery is only compatible with the Solis RHI 5G inverters.

Key selling points:

- 90% Depth of Discharge
- Wide Temperature Tolerance
- CAN/RS485 Communication
- Low Voltage

Battery Size	5,200Wh
Depth of Discharge	90%
Usable Capacity	4600Wh
Discharge Current	100A
Number of Cycles	>6,000
Cycle Efficiency	
Weight	52kg
Warranty	10 years



FE-LV5200



FE-HV2600

Battery Size	2,600Wh
Depth of Discharge	90%
Usable Capacity	
Discharge Current	
Number of Cycles	
Cycle Efficiency	
Weight	32.kg
Warranty	10 years

## HV2600 2.6kWh HV Battery

The HV2600 is a high-performance, scalable battery storage module for use with 1ph and 3ph Inverters and AIO Fox ESS (due end July).

The modular design allows for maximum flexibility, making it suitable for a broad range of storage applications. Additional batteries can be installed in series (even numbers). Installation is easy, using a plug and play solution that saves valuable time for installers.



# GivEnergy

## Eco Li-Ion Batteries

GivEnergy batteries use the latest LiFEPO4 prismatic cell technology which is widely considered the safest battery technology on the market. The cells do not contain Cobalt, which generates its own oxygen when stressed and can cause ignition. Also each cell can be monitored and individually balanced.

The bespoke Battery management system is designed and manufactured in house, therefore works perfectly with the system as a whole.

Key selling points:

- Battery sizes can be mixed
- Additional batteries can be added any time after initial install. Even after 5 years
- UK technical backup and support
- Cells operate at a wide temperature range (-20°C to +55°C)
- Cells have an expect lifespan of >20 years

Battery Size	2.6kWh	5.2kWh	8.2kWh
DoD	90%		
Usable Capacity	Up to 2340W/h	Up to 4680 W/h	Up to 7380W/h
Discharge Current	25A	51A	80A
Number of Cycles	5000 full cycles		Unlimited to 10 yrs
Cycle Efficiency	97% DC in to DC out	97.5% DC in to DC out	98% DC in to DC out
Weight	30kg	28kg	74kg
Warranty	10 years		



GIV-BAT-ECO2.6 / GIV-BAT5.2 / GIV-BAT8.2



# GivEnergy

## Total Energy Management Systems

GivEnergy design and manufacture their own inverters, batteries and state-of-the-art management system and monitoring platform which combine to offer an exceptional storage package. The system uses intelligent algorithms to optimise the flexible tariffs available and generate significant savings. By storing the excess power generated from solar PV, self-consumption is maximised thereby reducing grid dependency.

In the range there are hybrid inverters for new installations, AC for retrofit and battery units with some unique benefits.

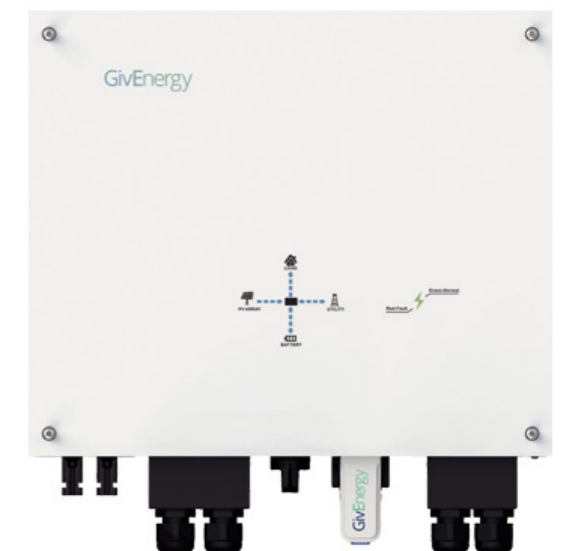
## Home Hybrid Inverter

Suitable for new build or retrofit to an existing solar PV system, the Home Hybrid Inverter is available in 3.6kW and 5.0kW models.

The 3.6kW or 5.0kW hybrid unit simultaneously handle PV power generation, along with battery charge and discharge. Wi-fi is optional and gives access to the powerful monitoring platform, along with remote, site-specific firmware upgrades and troubleshooting via web browser or app.

Key selling points:

- UK technical backup and support
- Easy to install - plug and play
- Smart monitoring portal for full monitoring and remote control of all assets



GIV-HY3.6 / GIV-HY5.0



GIV-AC3.0

## AC Coupled Inverter

This AC coupled 3.0kW unit charges from surplus PV generation, and also from the grid. Wi-fi is optional and gives access to the powerful monitoring platform, along with remote, site-specific firmware upgrades and troubleshooting via web browser or app.

Key selling points:

- Suitable to new builds or retrofit
- Monitor usage through web-app interface
- Lightweight and compact
- Remote software updating via Wi-fi dongle



# Huawei

## Luna Smart String Energy Storage System

Huawei's new high voltage modular lithium battery allows for parallel connection of up to 30kWh thanks to its modular design of 5kWh in its different models of 5, 10 and 15kWh.

Aesthetically pleasing, compact and modular design combined with the latest technology make Luna a smart lithium battery ideal for self-consumption installations.

Key selling points:

- Quick commissioning – automatically detected in app
- Compatible with single and three phase inverters
- Compact size for easy installation
- 10-year warranty
- Safe & reliable due to Lithium Iron Phosphate (LFP) cell



## Smart Energy Controller Single Phase

Directly compatible with the Huawei Luna battery the Smart Energy Controller (FusionHome) is Huawei's new single-phase plug-and-play hybrid inverter.

Simple to install, this hybrid inverter is commissioned using an app with auto-detection of system equipment and registration by scanning any device.

Key selling points:

- Ai Self learning new arc detection
- Physical and logical module layout
- Module-level performance monitoring
- Smart I-V diagnosis



# Huawei

## Smart Energy Controller Three Phase

Directly compatible with the Huawei Luna battery the Smart Energy Controller (FusionHome) is Huawei's new single-phase plug-and-play hybrid inverter.

Simple to install, this hybrid inverter is commissioned using an app with auto-detection of system equipment and registration by scanning any device.

- AI Powered Arcing Protection with Pinpoint Positioning
- Compatible to SUN2000-450W-P optimizer\*
- Battery ready by direct Plug & Play, no extra device or any retrofit required
- A 10KTL inverter allows 10kW full power AC output plus 10kW full power battery charge
- High efficiency inverter topology, Max. Efficiency 98.6%



# LG Energy Solutions

## RESU PRIME High Voltage Batteries

LG Chem, based in Seoul, are the largest chemical company in South Korea. The Energy Solution Division was the first to mass produce Lithium-ion batteries domestically and is now leading the global market through superior technology and productivity.

LG Chem lithium ion batteries offer a compact maintenance free solution for homes and small commercial grid connected solar PV self-consumption storage systems..

Key selling points:

- 5kW Rate / 7kW Peak Power
- Larger capacity whole home backup 9.6KWh/ 19.2KWh (2 x in parallel)
- Quick and easy handling due to modular design
- On the spot maintenance with detachable control unit
- Remote battery monitoring
- CAN and RS485
- SolarEdge compatible
- 10-year product warranty, and LG Energy Solution guarantees energy retention (of 70%) after 10 years.



# LG Energy Solutions

## RESU High Voltage Batteries

Key selling points:

- Compact and lightweight
- Designed to allow easy wall-mounted or floor-standing installation
- Built-in DC circuit breaker
- Designed to ensure 80% of capacity retention after 10 years use
- IP55 for indoor or sheltered outdoor installation
- Simple inverter connections, reducing installation time and costs



# RESU

	RESU7H-C	RESU7H-R	RESU10H-C	RESU10H-R
Communication Interface	CAN (SMA)	RS485 (SolarEdge)	n/a	
Battery Size	7000Wh		9800Wh	
DoD	95%			
Usable Capacity	6600Wh		9300Wh	
Discharge Current	8.1A		11.7A	
Weight	87kg	75kg	99.8kg	97kg
Warranty	10 years			

# PylonTech

## Lithium Iron Phosphate Batteries

A range of low voltage Home Energy Storage Systems containing lithium iron phosphate cells and battery management control system

Available in 2.4kWh (US2000) 3kWh (US3000) modules. Multiple batteries can be combined in parallel to expand capacity as required.

BMS monitors temperature current, voltage, SoC and SoH. Safety approved to TÜV CE UN38.3.

Key selling points:

- Competitive pricing
- Cycle life of 6000 cycles / 7 years standard warranty
- Compatible with many hybrid and AC coupled inverters - [see page 26](#)
- Available in cost effective packages with many inverters on the Segen portal

	US2000	US3000
Battery Size	2400Wh	3552Wh
DoD	90%	
Usable Capacity	2,200Wh	3,200Wh
Discharge Current Rec/Max	25A/50A	37A/74A
Number of Cycles	6000	
Weight	24kg	32kg
Life Expectancy	15 years	
Warranty	7 years, extendable to 10 years	



US2000B-PLUS



US3000

# PylonTech

## Force-H2 High Voltage System

The Force H2 is the latest high voltage battery storage system from Pylontech.

The stacking system provides flexible configurations from 96V to 384V and 7.1kWh to 24.86 kWh capacity. The indoor/outdoor compatibility feature provides more possibilities of installation, which is easy for installers due to simple plug-and-play design. Ideal for large home and small commercial applications.

Key selling points:

- Modular & stylish
- 96V Li-ion Battery
- Residential and small-scale commercial

	Force-H2
Battery Size	3.552kWh
DoD	90%
Usable Capacity	
Discharge Current Rec/Max	
Number of Cycles	6000
Weight	35kg
Life Expectancy	15+ years
Warranty	10 years

Force-H2 High Voltage  
7.10kWh, 10.66kWh & 14.21kWh



Force-L1 Low Voltage PYL-L2-BATT  
7.10kWh, 10.65kWh & 14.2kWh



# SolarEdge

## StorEdge Interface

The SolarEdge StorEdge interface brings battery storage to SolarEdge single phase inverters.

Designed for new StorEdge installations or to upgrade existing SolarEdge systems to the StorEdge on-grid solution. The StorEdge interface supports simple installation and connection of the high voltage storage battery (currently LG Chem RESU range of high voltage batteries, RESU7H and RESU10H) and SolarEdge energy meter to the SolarEdge inverter. It is suitable for indoor or outdoor installations and includes a 10-year standard warranty.

Key selling points:

- Integrates into existing SolarEdge systems
- Simple installation
- StorEdge/LG Chem battery packages (including disconnect switches, current transformers and energy meters) available on the portal



SE-STI-S4

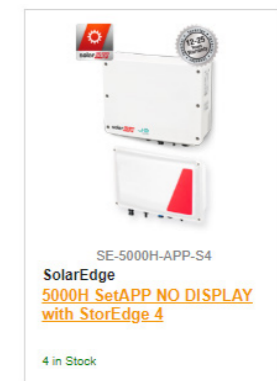
## StorEdge Hybrid Inverter

By combining a SolarEdge single phase PV inverter with a StorEdge STI DC interface, Segen offers a SolarEdge Hybrid inverter package which, together with LG Chem RESU Batteries, can be used on new installations that require storage.

Key selling points:

- HD Wave latest inverter technology
- Full SetApp software integration
- StorEdge/LG Chem battery packages available on the portal
- Perfect for new installations

Hybrid packages are currently available as 3680W, 4000W and 5000W.



## StorEdge AC Coupled Inverter

Designed to upgrade existing installations of non-SolarEdge inverter or three-phase SolarEdge inverter. The SolarEdge AC coupled inverter handles battery charging only and doesn't work with power optimisers or as a standard solar inverter. Thanks to AC Coupling it's suitable for any existing PV system. Uses the StorEdge interface and LG RESU batteries. SetApp software package enables monitoring of battery status, PV inverter production and self-consumption.

Key selling points:

- Suitable for 3rd party PV inverter systems
- Suitable for 3phase systems
- Charging from grid compatible
- Quick commissioning through SetAPP



SE-5000H-APP-AC



# SolarEdge

## Energy Bank

The Energy Bank is a 10kWh unit consisting of NMC (Nickel, Manganese and Cobalt) battery cells. It's a scalable, DC coupled battery which can feature up to 3 batteries connected in series to a single charger (pending a firmware upgrade).

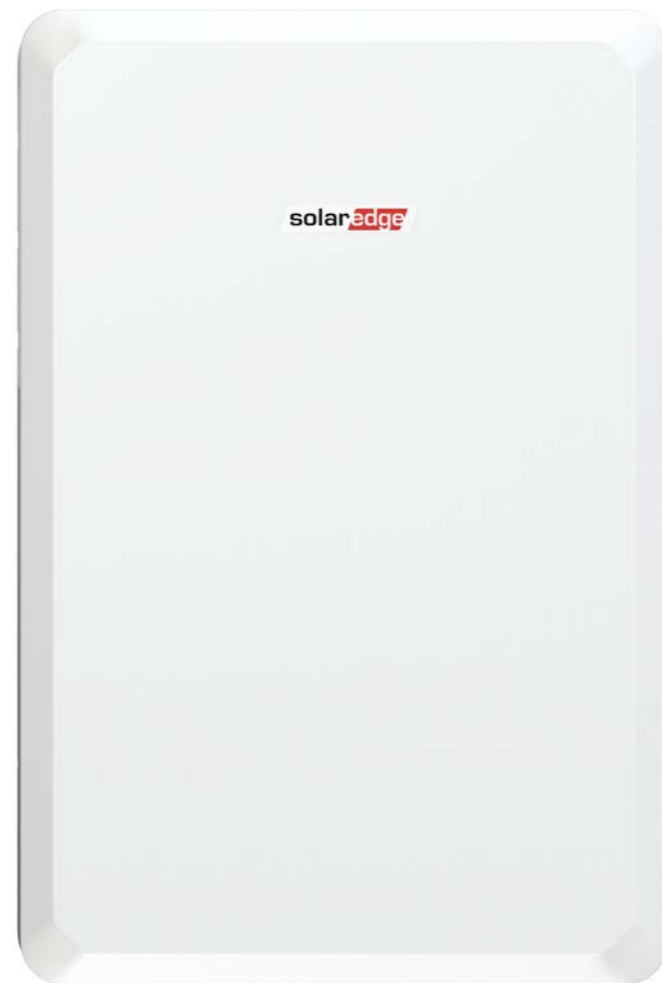
Compatible with SolarEdge branded chargers, including StorEdge charge controllers and the standard range of HD Wave SetApp PV inverters (with Energy Meter added).

It has an IP protection rating of 55 and a recommended ambient operating temperature range of -10 to +50C and while can be installed outdoors many installers would prefer to limit installations to indoor locations.

The battery also offers a 10-year warranty with a minimum residual capacity of 70% without a limit on the number of cycles.

Key selling points:

- Supports up to 3 batteries per inverter for more power and capacity 100% depth of discharge
- Superior system efficiency (PV> Battery> Grid)
- Simple installation with plug & play
- Floor or wall mounting



SE-BATTERY-10KWH



# SolaX Hybrid

## X1 Hybrid Inverter

X1-Hybrid is the third generation of SolaX storage inverters and offers grid backup, export control and advanced connectivity for grid trading applications.

High voltage battery compatibility reduced costs of cabling.

Works with 1 to 3 SolaX batteries (of the same capacity).

Key selling points:

- Available as a highly cost-effective package with SolaX batteries (see portal)
- 10 years warranty
- 3.0kW, 3.7kW and 5.0kW options
- SolaX Cloud online monitoring platform compatible
- Export limitation built in
- Emergency Power Supply built in



X1-3700T

## X3 Three-Phase Hybrid

The X-Hybrid three-phase inverter from SolaX offers a flexible and scalable solution for both domestic and commercial applications.

The three-phase series includes inverters ranging in size from 5 to 10kW, and the ability to install multiple inverters in parallel allow for scalable battery storage systems to be designed. The inverter is equipped with a built-in EPS (Emergency Power Supply), has multiple communication options and can be controlled remotely.

X3 Hybrid is supports unbalanced phase loads and is suitable for grid trading applications.

Key selling points:

- Up to 25.2kWh storage per inverter
- Up to 10kW Max charge/discharge
- G100 Export Limitation compliant
- 5.0kW, 6.0kW, 8.0kW, 10.0kW options



X3-8000T



# SolaX AC Coupled

## X1-AC Coupled Inverter

Upgrade any PV system with the addition of a SolaX AC coupled inverter charger.

Works with 1 to 3 SolaX batteries per BMS (of the same capacity). Suitable for grid trading applications.

Key selling points:

- Available as a highly cost-effective package with SolaX batteries (see portal)
- Existing inverter independent
- SolaX Cloud online monitoring platform compatible
- 10 years warranty
- 3.0kW, 3.6kW and 5.0kW options



X1-AC-3.6

## X1-Fit RetroFit AC Coupled Inverter

Upgrade a PV system with the X1 RetroFit AC Coupled Inverter Charger from SolaX. Compatible with any brand (single phase) inverter, the X1 retro-fit has a maximum efficiency of up to 97%, is rated for indoor or outdoor use and can be remotely monitored via the XCloud.

Key selling points:

- High voltage battery support means thinner cables are required
- 6kW Max charge/discharge
- Wifi or LAN stick available separately
- Suitable for grid trading applications with less than 0.5s response time
- Charging from grid possible
- Natural Cooling, quiet and low maintenance



X1-FIT-5.0



# SolaX Batteries

## Triple Power 4.5kWh & 6.3kWh

SolaX's Gen2 triple power HV batteries are designed to work with SolaX's one- and three-phase hybrid and AC coupled inverters (X1-Hybrid, X3-Hybrid, X1-AC and X1-Fit).

They are available in 4.5kWh and 6.3kWh. Sizes cannot be mixed, and 1-3 batteries can be used in a single-phase system and 2-4 in a three-phase system. Each system requires one master control BMS.

Key selling points:

- Scalable to 25.2kWh
- Up to 6kW charge/discharge
- Floor and wall mountable
- High Voltage - so thinner cables can be used
- Easy installation – plug and play with all cables supplied

Battery Size	4500Wh	6300Wh
DoD	90%	
Usable Capacity	4050Wh	5670Wh
Discharge Current	30A Max	
Number of Cycles	6000	6000
Cycle Efficiency	95%	
Weight (BMS = 5.7kg)	56.6kG	67.5kg
Warranty	5 years, extendable to 10 years	



SOLA X-T45-G2-BMS

## Triple Power 5.8kWh

The perfect match to X1-Hybrid, X3-Hybrid and X1-AC, the SolaX Triple Power LFP battery is available as Master Battery 5.8kWh and Slave Battery 5.8kWh.

Each Master can be installed with up to 3 Slave batteries in series (charger dependent) for up to 23.2kWh storage capacity.

Battery Size	5800kWh
DoD	90%
Usable Capacity	5220Wh
Discharge Current	25A
Number of Cycles	6000
Cycle Efficiency	99%
Weight	72.2kg
Warranty	10 years



HV-T-BAT-H-58



# Solis

## RHI Hybrid Inverter

The Solis RHI series is a range of hybrid inverters which works in a PV system with a battery to optimise self-consumption.

They have dual MPPT to make system design easier and help to mitigate negative effect of shading or support east-west orientation for example. The RHI series can offer backup for properties with unreliable mains electricity supplies. It works with PylonTech LV and BYD L3.5 lithium ion batteries and Segen can supply the RHI with batteries as a package.

The RHI series can offer off-grid backup with a fast response time for properties with unreliable mains electricity supplies

Available in 3kW, 3.6kW and 5kW

Key selling points:

- Dual MPPT
- Works on-grid and in backup
- G100 Export Limitation compliant



SOL-3.6K-RHI-48ES-DC

## RAI AC Coupled Inverter

The Solis RAI series is a charger inverter which can be added to any grid-tied PV system. Because it's AC coupled, it can be used to upgrade any existing PV system to battery storage and can even be used without PV as a battery backup system.

Advanced BMS optimises battery usage and lifespan.

IP65 outdoor rated, suitable for multiple installation environments.

Key selling points:

- Inverter independent
- Natural cooling means no fan noise
- Optional Stand-alone mode
- Competitively priced
- Based on 5th generation of Solis inverters



SOL-3.0K-RAI-48ES-5G-AC



# Sunsynk

## 3.6kW AC 7kWp Hybrid Inverter

Most inverters have an MPPT that matches the power of the inverter. That means a 5KW inverter has a 5KW MPPT. What makes Sunsynk inverters stand apart is that they come with an MPPT that exceeds the size of the inverter thereby enhancing its performance.

The Sunsynk 3.6KW Hybrid comes with a 7KW MPPT and is capable of handling power supply to a domestic premises and battery storage.



SUN-3.6

Key selling points:

- AC-Coupled Inverter
- DC-Coupled MPPT
- AC-Coupling enables Micro-Inverter and both Off & On-Grid Systems.
- Can be installed in either single or 3-phase configurations
- 50% surge-power for 10 seconds.
- 90 Amp Battery Charger
- Programmable via full-colour touchscreen time of use
- Touch screen and superior user-Interface graphics.
- Fully compliant with UK standards.
- Lightweight [Less than 20Kg]
- Up to 99% efficiency
- THd<3%
- Can work with both Lithium and AGM battery systems
- 5 years warranty





# Tesla Powerwall

## AC Powerwall 13.5kWh

Powerwall is a fully integrated AC battery system for residential or light commercial use. Its rechargeable lithium-ion battery pack provides energy storage for solar self-consumption and time-based control.

Powerwall's electrical interface provides a simple connection to any home or building. Its revolutionary compact design achieves market-leading energy density and is easy to install, enabling homeowners or businesses to quickly realise the benefits of reliable, clean power.

Key selling points:

- Flexible installation and mounting options
- Compatible with any PV system
- Offers 100% depth of discharge
- Unrivalled 10 year warranty

Battery Size	13.5kWh
Usable Capacity	13.5kWh
Discharge/ Charge Rate	5000W/3680W
External Battery Expansion	Can add up to 10 per site giving 135kWh with 50kW
Weight	114kg
Warranty	10 years (80% energy retention) unlimited cycles



TES-POWERWALL

## Gateway

Powerwall must be installed with a Tesla Gateway – this provides energy management and monitoring for solar self-consumption and time-based controls.

Communicating directly with Powerwall, the Gateway allows you to monitor energy use and manage backup energy reserves from any mobile device through the Tesla app.



TES-GATEWAY

# POWERWALL

# Comparison & Compatibility

These two charts are designed with you in mind to help you make an informed decision when choosing the correct storage system for any situation.

Click on the images below to view online and download.

Segen [www.segen.co.uk](http://www.segen.co.uk)  
0330 9000 141  
info@segen.co.uk

### Battery Comparison Chart - BATTERIES

BATTERIES	One Man Install	Commercial / Residential	Operating Temp. (°C)	Grid Back-up?	Monitoring?	Stackable, Modular?	Charge from Grid?	Outdoor Rated?	Dynamic Load Balancing	3-Phase?	New Build	Retro-Fit	Warranty
Alpha M48112-S Storion	✗	C	0 to +50	✓	✓	✓	✓	✗	✗	✗	✗	✗	10
Alpha M4856-P, SMILE 5.7 & 10	✗	R	-10 to +50	✓	✓	✓	✓	✗	✓	✗	✓	✓	10
FOX LV5200	✓	R	-10 to +50	✓	✓	✓	✓	✗	✗	✗	✓	✓	10
FOX HV2600	✓	C/R	-10 to +50	✓	✓	✓	✓	✗	✗	✗	✓	✓	10
GivEnergy 2.6-8.2kWh	✓	R	0 to +50	✓	✓	✓	✓	✓	✓	✓	✓	✓	5*
Huawei Luna	✓	R	-20 to +60 (storage at +40)	✗	✓	✓	✓	✓	✓	✓	✗	✗	10
LG Energy RESU	✗	R	-10 to +50	✗	✓	✓	✓	✓	✓	✓	✓	✓	10
Pylontech Force H2 & L2	✗	C	0 to +50	✓	✓	✓	✓	✗	✗	✗	✗	✗	10
Pylontech US range	✓	R	-20 to +60	✓	✓	✓	✓	✗	✗	✗	✓	✓	7
SolaX Triple Power 4.5-6.3k	✓	R	-20 to +60 (storage at +40)	✓	✓	✓	✓	✗	✓	✓	✓	✓	5
Sunsynk LFP 5.12kWh	✓	R	-10 to +50	✓	✓	✓	✓	✗	✓	✓	✓	✓	10

Last updated: 25 August 2021 11:06 am \* warranty extension available

Segen [www.segen.co.uk](http://www.segen.co.uk)  
0330 9000 141  
info@segen.co.uk

### Battery Compatibility Chart - HYBRID

SINGLE-PHASE	ALPHA		FOX ESS		GIVENERGY		HUAWEI	LG ENERGY		PYLONTECH		SOLAX	SUNSYNK
	2.9kWh 5.7kWh 10.1kWh	10.1kWh	HV2600	LV5200	2.6kWh 5.2kWh 8.2kWh	5.2kWh	LUNA 5-10-15 kWh	LV	HV	US2000C US3000C FORCE H2 FORCE L2	FORCE H2	4.5kWh 5.8kWh 6.3kWh	5.12kWh
Solis RHI 48ES 5G DC 3, 3.6, 4.6, 5, 6kW	✗	✗	✗	✓	✗	✗	✗	✓	✗	✓	✗	✗	✗
Sunsynk 5kW & 8kW	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓
Alpha SMILE 5 5000W	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Fox H1 3.7kW & 5.0 incl. BMS	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Fox All-in-One 3.7kW & 5kW	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
GivEnergy 3.6kW, 5.0kW	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗
Huawei HV L1 3, 3.68, 4, 4.6, 5, 6kW	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗
SolaX X1 3000T, 3700T, 5000T	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗
SolarEdge StorEdge 3.68, 4, 5, 6kW	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗

Last updated: 25 August 2021 10:38 am

# Segen Storage Packages

All battery storage systems require a number of different components to fully function and, to make these easier to configure and purchase, Segen has defined a number of packages ranging in system type and size.




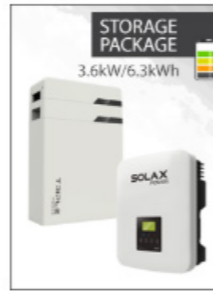
## Grid Backup Packages

All these packages are capable of providing energy to defined essential loads in the property in the event of a grid-failure. Segen have created packages in a range of sizes to suit customer requirements.

These packages are made up of the following:

- Solis & SolaX Hybrid Inverters
- SolaX AC-FIT Coupled
- Solis AC Coupled Battery Charger / Inverter
- PylonTech, SolaX, LG Chem & BYD batteries

In order to locate these packages on the [Segen Portal](#), select "Products" from the top bar menu and select "Storage Systems". You can then select "[Grid Backup Packages](#)" from the menu.

 <p><b>STORAGE PACKAGE</b> 13.5kWh</p> <p>TES-PWRWALL-PACK</p> <p><b>Tesla</b> <a href="#">Tesla AC Powerwall 13.5kWh and Gateway Storage 1ph PACKAGE</a></p> <p>38 In Stock</p>	 <p><b>STORAGE PACKAGE</b> 3kW/2.6kWh</p> <p>GIV-AC3.0-2.6</p> <p><b>GivEnergy</b> <a href="#">GivEnergy 3.0kW AC Coupled inverter with 2.6kWh Battery Package</a></p> <p>93 In Stock</p>	 <p><b>STORAGE PACKAGE</b> 3kW/3.5kWh</p> <p>SOL-RAI-AC-3.0-PYLON-3.5</p> <p><b>Solis</b> <a href="#">RAI AC coupled 3.0kW Storage / Pylon 3.5kWh Package</a></p> <p>93 In Stock</p>	 <p><b>STORAGE PACKAGE</b> 3.6kW/6.3kWh</p> <p>X1-AC-3.6-T63-PACK</p> <p><b>SolaX</b> <a href="#">SolaX X1-AC Coupled 3.6kW with 6.3kWh battery and Meter package</a></p> <p>1 In Stock</p>
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## Self-Consumption Packages

These packages enable the property to utilise a greater proportion of the energy generated by the PV system but do not operate in the event of a grid-failure.

These packages are made up of the following:

- Enphase AC Batteries
- LG Chem Batteries
- SolarEdge AC Coupled Charger / Inverters

In order to locate these packages on the Segen Portal, select "Products" from the top bar menu and select "Storage Systems". You can then select "[Self Consumption Packages](#)" from the menu.

# Enphase Residential Storage System



Enabling energy independence for your home



## Reliable

- Distributed AC architecture with no single point of failure
- Proven reliability with 21+ million microinverters installed worldwide
- No moving parts



## Smart

- Remote firmware upgrades to both inverter and battery
- Monitor the battery status, PV production, and consumption data
- Smarter energy consumption to reduce electricity bills
- Remote diagnostics



## Scalable

- Plug and play installation
- Interconnects with standard household AC wiring
- Modular 1.2 kWh capacity at 100% depth of discharge (DoD)

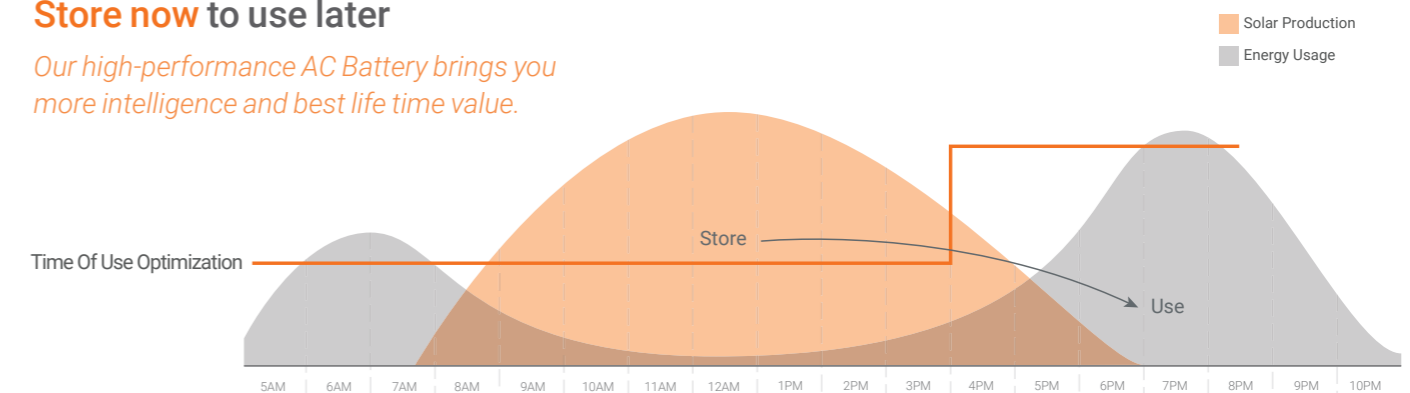


## Safe

- No high voltage DC in system
- LFP chemistry (safest) with 10 years warranty or 3650 cycles
- Cells safety tested by TÜV Rheinland

## Store now to use later

Our high-performance AC Battery brings you more intelligence and best life time value.



## Size Doesn't matter

Our batteries come in 1.2 kWh size. So you can easily add more storage as and when you need it.



[enphase.com/en-uk](https://enphase.com/en-uk)



# Pre-sale Checklist

When planning a storage proposal there are a few things that you can take into consideration which will help you and the customer decide on the suitability of storage for the site, what type of storage system would most closely reflect their energy requirements and what storage capacity they would be able to effectively utilise.

1. Is there an existing PV system installed on the property already? If yes, does this system generate enough surplus energy throughout the day to charge the battery? The answer to this would affect the viability of DC coupled storage, which can only charge from surplus PV energy. For example, there may be more scope for storage on a 5kW PV system with low usage than a 20kW PV system with very high usage, because the 5kW system produces more surplus energy in comparison to the 20kW, resulting in more surplus energy available to be captured.
2. Can the customer provide details of their energy usage or does the existing inverter on site capture export data? Consumption and Production data at this stage of the planning process is invaluable.
3. Is the proposed location of the installation suitable? Is the property itself accessible and is the proposed location within the property accessible? It is important to install in line with the IEC code of practice and we know many systems feature inverters installed in lofts, however this does not mean the same protocol should be followed when connecting storage. If the battery is in the loft and is only accessible through a step ladder, this would not be considered accessible and could be considered dangerous.
4. Does the property have an internet connection for the system to allow monitoring and to enable to full manufacturer warranty where applicable?
5. Is the existing inverter compatible with the new storage system? Is a firmware or hardware upgrade required? Or do you have to consider looking at AC storage?
6. If the rated AC output of the system changes

- with the addition of storage, has permission been sought from the DNO beforehand? Do the products have the necessary certification to be connected in line with current UK regulations and has the homeowner been advised to notify their building and contents insurance companies?
7. What is the usage profile/occupation status of the property? Is this occupied year-round? A property with a UK average profile (Parents at work & kids at school throughout day – period when generation is highest) will benefit the most from a system that promotes self-consumption. A holiday home out in the countryside which is only occupied for parts of the year would benefit more from a battery backup system for example.
  8. If the proposal is for a grid-backup system, has the customer been made aware of what loads and for how long they would be able to power these in the event of the power cut? Additionally has it been made clear to the system owner that the system would only provide backup power if there was remaining capacity within the battery – so if the power cut happened at 9PM at night after the batteries have already discharged, they will not be able to provide backup.
  9. Is there a fire alarm within close proximity to the storage system.
  10. Have the storage figures provided to the homeowner taken into account the efficiency of the system as well as the degradation factor over system lifetime?

# Grid Connection Requirements

The following DNO rules apply when connecting battery storage to the grid:

1. If you add an AC coupled storage inverter to a property, and the combined rating of any existing PV inverter and the new storage inverter exceeds 16A per phase, you will need to make a G99 grid connection application prior to the installation.
2. If the AC coupled inverter has a rating of less than 16A per phase it will need a G98 certificate
3. You do not need to notify the DNO when adding DC coupled storage that doesn't change the AC rating connected to the grid.

Find out more here - [www.energynetworks.org/electricity/engineering/distributed-generation/dg-connection-guides.html](http://www.energynetworks.org/electricity/engineering/distributed-generation/dg-connection-guides.html)

## Contact Us

### Contacting Segen

As an active customer, you not only have access to the [Segen Portal](#), but you also have support from a dedicated account manager, order processor and technical advisor.

If you want to talk about the portfolio on offer, or if you need portal or ordering support please contact your Account Manager.

If you have placed an order and have a query about it, please contact your Order Processor.

If you require advanced technical advice, please contact your Technical Contact.

Contact details for your contacts can be found on the [Segen Portal](#)

If you do not yet have an account with us, please email [info@segen.co.uk](mailto:info@segen.co.uk) and a member of staff will be in touch to help you set up your account.

Last Updated 26 November 2021 3:45 pm.

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