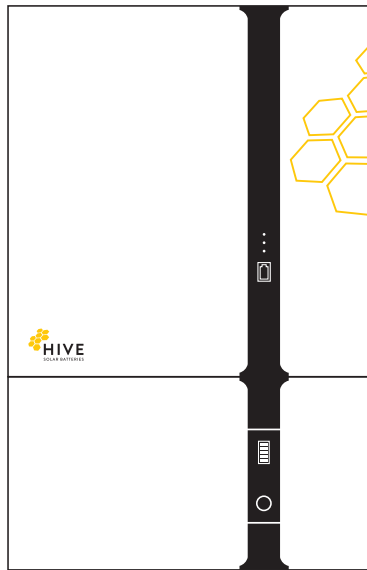




HIVE

SOLAR BATTERIES



OWNERS MANUAL

Primary Unit (Storion-SMILE-B3)
Secondary Unit (M4856-P)

Australia

Alpha ESS Australia Pty. Ltd.

Tel: +61 1300 968 933

E-mail: australia@alpha-ess.com

Website: www.alpha-ess.com.au

Add: Suite 1, Level 1, 530 Botany Road, Alexandria, NSW

China

Alpha ESS Co., Ltd.

Tel: +86 (0) 513 806 868 91

E-mail: info@alpha-ess.com

Website: www.alpha-ess.com

Add: Jiu Hua Road 888, High-Tech Industrial Development Zone, Nantong City, 226300, Jiangsu Province

1.1 Copyright Declaration

The copyright of this manual is owned by HIVE Solar Batteries and all rights are reserved.

- Please keep the manual within the vicinity of the HIVE Solar Battery.
- Please operate the HIVE Solar Battery strictly according to the safety and operation instructions described in this manual.
- Do not operate the system before reading this manual.

1.2 Version Information

Version	Date	Contents
VO1	21.01.2020	HIVE Solar Batteries - Owner's Manual (Rev 1)

Contents

1	Installation & Commissioning Checklist (for installers only)	1
1.1	Induction requirements (for installers only)	1
2	Important Safety Precautions	3
3	HIVE Solar Batteries	5
3.1	Technical Specifications	6
3.2	Operating Principal	7
3.3	System Operation	7
3.4	System Operation Status	8
4	Maintenance	10
4.1	Function Checks	10
4.2	System Faults/Errors	10
5	System Monitoring	11
5.1	Wi-Fi Configuration	11
5.2	System Registration	13
5.3	HIVE Solar App Features	14
6	Emergency Situations	20
6.1	Emergency Handling Plan	20
6.2	Fire	20
6.3	Leaking Batteries	20
6.4	Wet Batteries	21
6.5	Damaged / Decommissioning Battery	21
7	Warranty Conditions	21
8	Safety Data Sheets	28

CHAPTER 1

Installation & Commissioning Checklist

(For Installers Only)

Following the Installation of the HIVE Solar Battery, please ensure the below checklist is completed and a record of the same is shared with your system provider. It is also recommended that installers retain records of the equipment installed.

No.	Items	Description
1	System Provider (Contact details)	
2	Primary Batteries	Model No – Storion-SMILE-B3 (2.9 kWh) S/N –
3	Secondary Batteries	Model No – M4856-P (2.9kWh) No. of batteries – S/N – S/N – S/N – S/N –
4	Energy Meters	Model No – ACR10R No. of Meters –
5	Total Battery Storage Capacity (kWh)	
6	UN Number	UN 3480 / UN 3481
7	Date of Installation & Commissioning	
8	Firmware Versions Inverter EMS BMS	
9	Initial System Settings	As prescribed by Manufacturer (Alpha ESS)
10	Verification – Normal System Operation Is the Battery Charging? (Y/N) Is the Battery Discharging (Y/N)	N/A
11	If Backup/UPS is Connected, does the battery discharge towards connected loads with Utility grid is turned off? (Y/N)	
12	DC Connections – Is there any high resistance at the junction of the DC cables & battery terminals? (Y/N)	

1.1 Induction requirements (For Installers Only)

Following the Installation of the HIVE Solar Battery, please ensure that the system owner or nominated representative is provided the following information.

- Demonstration of the System shut-down & Start-up procedures.
- Introduction to the system manual.
- Explanation of the Alarm/Faults that may arise with the system (Section 2.3).
- Contact details of Manufacturer/ system provider.
- Basic System Operation & design principals.

Further, ensure that a copy of the below customer acknowledgement is provided to the system provider for installation records.

Customer Acknowledgement

I,(Customer)
 acknowledge that(System Provider)
 have attended my property and conducted the requested work. I confirm that
 the installer attending my property has completed the installation based on his/
 her recommendation for the most efficient energy production, provided me all the
 information as per the induction requirements (Section 1.1) and I confirm that I have
 agreed to this install location.

Customer's Signature:

Installer's Signature:

Date:

Date:



CHAPTER 2

Important Safety Precautions

The HIVE Solar Battery is an energy storage system (BESS) used to store electrical energy. Improper use of this system poses a risk of injury or death to the user or third party, as well as damage to the product. The storage system must always be operated as per the recommendations within this Owner's Manual.



Danger

Danger to life due to high voltages of battery and electric shock:

- Only qualified personnel who are equipped with the suitable specialist training, knowledge and experience are permitted to install and debug the system. Before performing any work on the inverter or battery pack, please disconnect the inverter from all voltage sources as described in this document.
- The Electrician should always wear the right Personal Protective Equipment (PPE – Level 1) while operating the Energy Storage system.
- Do not touch any uninsulated DC cables, as this may result in electrical shock or injury.
- Do not open the inverter and battery or modify any of the protective devices.
- Do not dispose of batteries in fire as the batteries may explode.
- Only use the battery system in its original state, without any unauthorised modifications and when it's in proper working order.
- Incorrect operation puts you and others at risk and could cause material damage and potential injuries.
- Do not use the battery system in potential explosive environments.
- Never block, modify or alter any electrical protective devices such as AC Circuit breakers, isolators or electrical cabling.
- Never attempt to repair the system yourself or using the services of a third-party electrician as this may result in injury or may void the product warranty.

- Ensure that all relevant local and national regulations are observed, and authorized electrician is responsible for adhering to these regulations.



Warning

Risks of chemical burn electrolyte or toxic gases:

The battery modules installed in the BESS are protected by multiple electrical protection devices and can be operated safely during standard operation. However, there is a potential for the electrolyte leakage from the battery pack as well as from toxic gases if damaged mechanically or break down. Therefore, it is recommended to proceed as follows;

- Do not install the system in extreme low/high temperatures or humidity exceeding the permitted range.
- Do not place heavy objects on top of the system or mechanically damage the batteries (by piercing, puncturing or deforming it).
- Do not short circuit the battery module or allow them to come in contact with metal.
- Do not continue to use the battery module after a short-circuit.
- Do not install the battery pack in the vicinity of any equipment containing flammable gases or liquids.
- If moisture penetrates the system (e.g. due to casing damage), please do not operate the system. Contact Alpha ESS immediately for further troubleshooting.
- If you come into contact with the electrolyte, please wash affected area with water immediately, and consult a doctor immediately.

Risk of injury by hoisting or falling system:

- Inverters and batteries are heavy and can cause personal injury if the inverter or battery is improperly lifted or dropped during transport or when attached or removed from walls.
- Lifting and transporting Storion-SMILE-B3/M4856-P must be conducted by more than 1 person.

CHAPTER 3

HIVE Solar Batteries

The HIVE Solar battery is a modular battery solution intended for residential solar storage and is capable of being expanded from 2.9 kWh to 17.4kWh. It has an all-in-one design that is popular with installers and homeowners, as it has been pre-engineered to minimise installation time and designed with the end-consumer's convenience in mind.

It is an AC coupled all-in-one battery energy storage system (BESS), designed to achieve the optimal usage of renewable energy. It utilises excess Solar PV generation to intelligently charge and discharge the battery, and can operate under automatic, manual and time-of-use (ToU) modes. Under the automatic mode, the HIVE Solar battery will store surplus energy into the battery and discharge towards connected loads to avert consumption from the Utility Grid. It is equipped with three LEDs and is designed to be easy to interact, stable, safe, and reliable.

In addition, it allows the consumer the flexibility to add on more battery units in the future, based on their energy needs. The simple plug-and-play installation allows the installer to connect the additional storage units in quick succession and reduce overall time spent on-site.

The HIVE Solar Batteries use the safest battery chemistry available on the market – Lithium Iron Phosphate (LFP). As an additional safeguard, software integration is used to monitor and protect the battery from any potential damage.

The Hive Solar Battery has two separate components,

- Primary Unit (Storion-SMILE-B3) – Battery pack with an Integrated Inverter.
- Secondary Unit (M4856-P) – Battery pack only (optional)

Primary Unit (Storion-SMILE-B3)

- AC-Coupled
- 2.9 kWh battery with integrated 3 kW inverter
- Modular design
- Easy install and low maintenance
- 24/7 monitoring
- Blackout protection (UPS)
 - Optional Add on

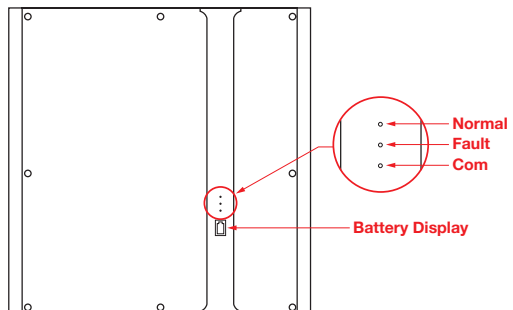


Fig 1.1 Primary Unit (Storion-SMILE-B3)

Secondary Unit (M4856-P Expansion pack)

- 2.9 kWh battery only
- Modular design
- Easy install & low maintenance

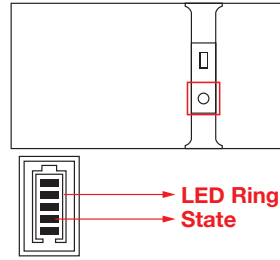


Fig 1.2 Secondary Unit (M4856-P)

3.1 Technical Specifications

Inverted Technical Specifications	
Max AC Output Power	3000 W
Max AC Input Power	3000 W
Operating Temperature Range	-10 °C ~ 50 °C, 0 °C ~ 40 °C (1C)
Warranty	5-year Product Warranty, 10 Year Battery Warranty
Max AC Input Current	13 A
Nominal AC Input Voltage	230 V
Battery Voltage Range	40 ~ 58 V
Max Charging/Discharging Current	60 A
Max Charging/Discharging Power	3000 W
Phase	Single – Phase
Nominal AC Output Voltage	230 V
Grid Voltage Range	180 ~ 270 V
Rated Frequency	50 / 60 Hz
Backup	UPS
Dimensions (Storion SMILE B3)	610 mm x 236 mm x 625 mm
Weight	45 kg
Battery Technical Specifications	
Cell Technology	Lithium Iron Phosphate (LFP)
Module Capacity	2.9 kWh
Usable Capacity	2.8 kWh
Depth of Discharge	(DoD) 96%
Module Nominal Voltage	51.2 V
Max Short -circuit Current	200 A
Cycle Life	10 000**
Max Charging/Discharging Current	56 A (1C)

**Cycle Life/Performance dependent on temperature conditions, expected to be limited when temperature drops below 0°C or above 40°C.

3.2 Operating Principle

The system is designed to operate based on the data measured by the Grid and PV CTs. The former constantly measures the Electricity consumption of the house and the latter measures the power generated by the Solar PV system.

When the Solar production > House Loads, the surplus power is stored within the batteries. When the batteries reach their peak capacity, the surplus is exported to the Utility grid. For example, if Solar production is 5 kW and the house loads are 3.5 kW, then the battery is charged at 1.5 kW.

When the House Loads > Solar Production, the battery discharges to cover the deficit between the two. For example, When the Solar Production is 3 kW and the House loads are 4 kW, then the Battery will discharge 1 kW.

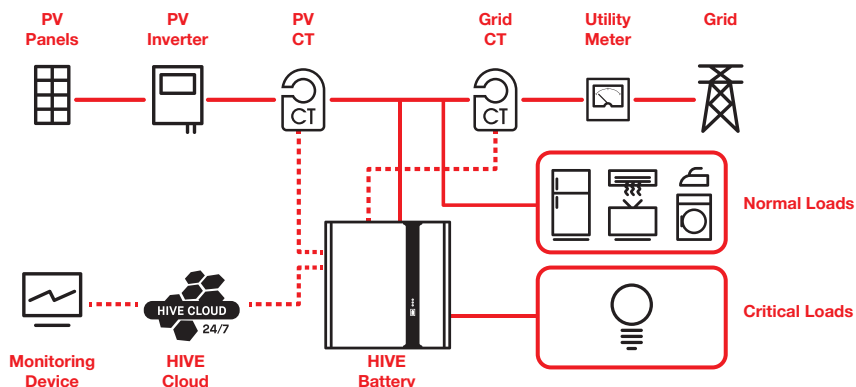


Fig 1.3 Storion-SMILE-B3 System

3.3 System Operation

The system must be turned On/Off in the correct sequence to avoid any damage.

Switching on:

- Turn on the Main Switch – Energy Storage (C20, Battery) within the switchboard.
- Turn on the Solar PV Inverter Main Switch within the switchboard.
- If AC Isolator is connected on Grid side, switch it on.
- Short press the Power button on the Primary Unit until the normal LED turns on.
- If a Secondary Unit is/are installed, short press the Power button on all Secondary Units until the LED indicators light up.

- Turn on the 80A Battery Isolator located on the left-hand side of the Primary unit.
- **Note** – If Backup Loads are connected, Switch on the Backup Main Switch (C20) and any connected RCBOs (UPS – dedicated circuits) within the Switchboard.

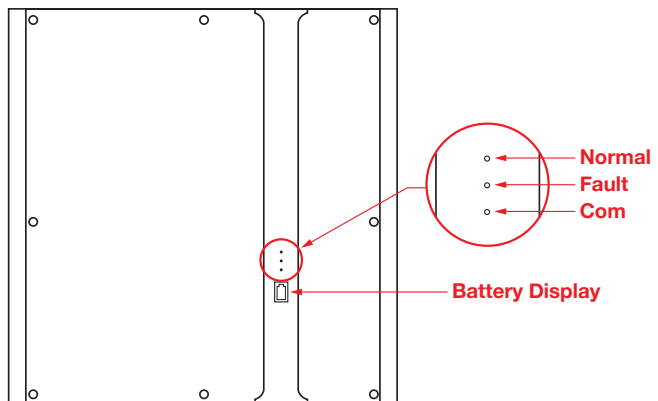
Switching Off

Note – If Backup Loads are connected, Switch off the Backup Main Switch (C20) and any connected RCBOs (UPS – dedicated circuits) within the Switchboard.









- Turn off the 80A Battery Isolator located on the left-hand side of the Primary Unit.
- Long press the Power button on the Primary Unit until the battery LED light turns off.
- If a Secondary Unit is/are installed, hold down the Power button on all Secondary Units until the LED indicators turn off.
- Turn off any AC Isolators located on either the Grid or Backup side.
- Turn off the Main Switch – Energy Storage (C20, Battery) within the switchboard.

3.4 System Operating Status

On the Primary Unit (Storion-SMILE-B3), there are three LEDs indicating the status of system parameters, viz. Normal operation, System Fault and Communication. The table on the following page describes the different LED states and their description.



*Fig 1.4 Operating Status Indicators
(Storion-SMILE-B3)*

LED	Status	Description
Normal		Solid Green – Normal system operation
		Single flicker – System standby or self-inspection
		Off – Switched off (or Out of order)
Fault		Off – Normal Operation (or Fault-free)
		Solid Red – System Fault (or Out of order)
Com		Solid Green – Normal Network Connection
		Single flicker – Connecting to HIVE Cloud
		Off – Switched off (or No network availability)

*Table 1.1 Operating Status
(Storion-SMILE-B3)*

In addition to the Operating Status Indicators, both the Primary and Secondary Units have an additional **LED Battery State Indicator** located on their front covers, that have a range of functions. They indicate the Battery State of Charge (or SoC) as follows:







LED Ring	SOC	Description
Standby: Green light flickering 1s Work: Green light flickering 10s		SOC<5%
		5%=<SOC<25%
		25%=<SOC<50%
		50%=<SOC<75%
		75%=<SOC<95%
		SOC>95%

Table 1.2 LED Battery State Indicator

CHAPTER 4

Maintenance

It is recommended that regular function-checks and cleaning is carried out on the HIVE Solar Battery for an ideal, fault-free and long-lasting operation. The battery modules contained within the enclosures do not require any maintenance.

4.1 Function Checks

It is recommended to periodically (fortnightly) check if the system is operating correctly, and ensure that it hasn't gone into fault mode. In addition, it's healthy to understand the basic operating principle of the system, where the Battery is expected to charge up to 100% on most days and discharge to a considerable extent overnight. If you observe any unusual behaviour, please contact your system provider or manufacturer for further troubleshooting.

4.2 System Faults/Errors

The Battery alerts the user to operational status using a wide range of Error and Protection codes (as described below). Please note that the system is capable of self/remote diagnosis whilst operating in Protection mode and is expected to return to normal operation thereafter. Please contact your system provider or Alpha ESS if the protection code persists for an extended period.









LED Ring	Protection Code	LED Display	Description
Green light flickering every 3 seconds.	1		Temperature difference
	3		High temperature
	4		Low-temperature discharge
	5		Over-current charge
	6		Over-current discharge
	8		Cell overvoltage
	9		Cell under voltage
	11		Low-temperature charge

Table 1.3 Protection Codes

If the system displays an Error Code (as shown above), please contact your installer or manufacturer immediately to conduct further troubleshooting. Do not attempt to resolve this by yourself or with the help of an unauthorised (or non-Alpha ESS) technician, as this may void the Warranty of the product.

CHAPTER 5

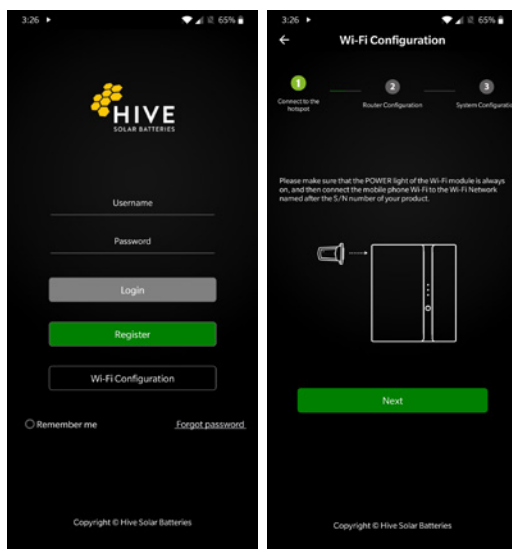
System Monitoring

Download and install the HIVE Solar App, from the below URLs–

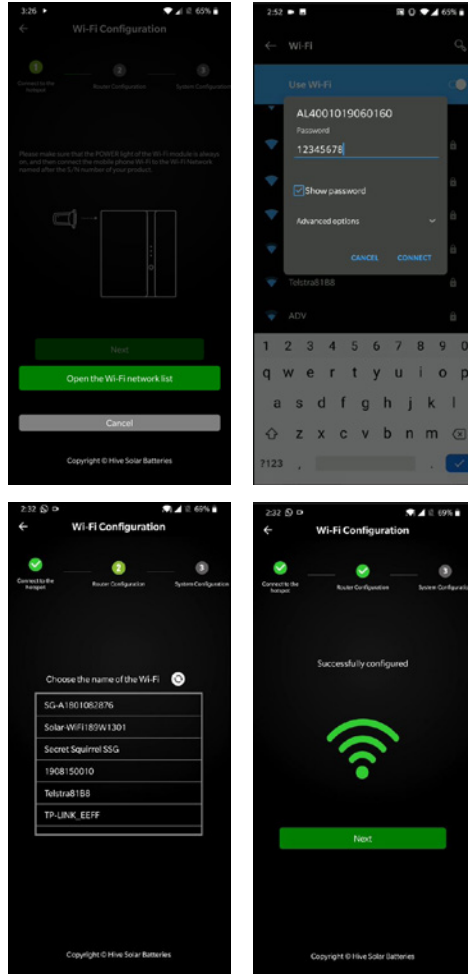
- iOS – <https://apps.apple.com/au/app/hive-solar-batteries/id1471491926>
- Android – https://play.google.com/store/apps/details?id=com.hive.monitor&hl=en_AU

5.1 Wi-Fi Configuration

- Open the HIVE Solar App, click the “Wi-Fi configuration” button and enter the Wi-Fi configuration interface.



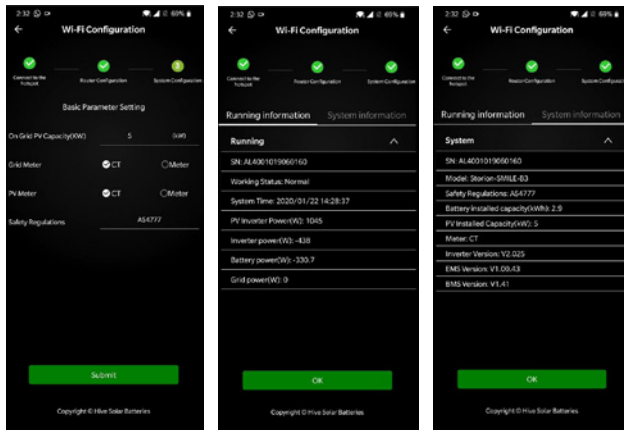
- Follow the prompts within the App, to connect the HIVE Wi-Fi module (named after the product S/N format AL-xxxxx) to your home Wi-Fi network. The network may prompt you to input a password, please enter – **12345678** and select ‘Connect’.
- After establishing a successful connection, please return to the Hive Solar APP and click “Next”. The app shall display a list of Wi-Fi networks available in the region. Find the Wi-Fi network to connect to, enter the Username and Password and press “Submit”. Following a successful Wi-Fi connection, the app displays a “Successfully Configured” message window and the Green LED / coms on the Primary unit shall come on (Flashing followed by Solid).



- Set the basic parameters, including the PV capacity (kW) of the existing Solar PV system on-site and select either CT or Meter, depending on equipment used and select “Submit” to complete the process (If systems are wired using Grid CT and PV CT – select CT, alternatively if they are wired using ACR-10R Meters – select Meter).

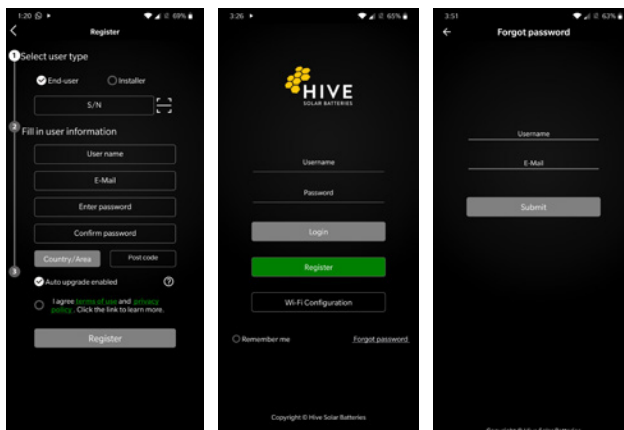
Note – The Basic Parameters are usually completed by the Battery Installer at the time of installation. If you are unsure, please retain the default values or contact your system provider.

5.2 System Registration



Contact your system provider for assistance with your Product Registration, as they may have a customised process. If your system provider asks you to register the system yourself, follow the below steps:

- Open the Hive Solar APP, click the “register” button and select user type as “End-User”
- Enter the Product S/N (AL-xxxxx), which is generally located on the side of the Primary Unit.
- Fill in the User information – Username, E-mail, Password, Country/Area and Postcode.
- Check Auto upgrade enabled and agree to the terms and conditions of the app.
- Select Register to complete the registration process.



Forgot Password:

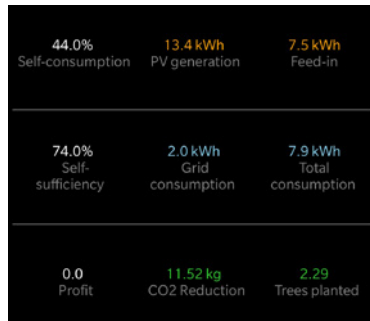
If you have forgotten your password, you can click Forgot Password on the login page. After submitting the required information, an email to retrieve your password will be sent to your mailbox. Follow the prompts within the Email to create a new password.

5.3 HIVE Solar App Features

Following the registration, Login to the HIVE Solar App using your Username/ Password, to access your System details.

Homepage:

The homepage shows an overall breakdown of the user's energy usage (in kWh), including Solar PV generation, Feed-in/Export, Grid consumption and Total consumption. This helps identify the user's Self-consumption and Self-sufficiency ratios. Finally, the user can access details of system energy conservation and environmental protection (equivalent trees planted).



Definitions:

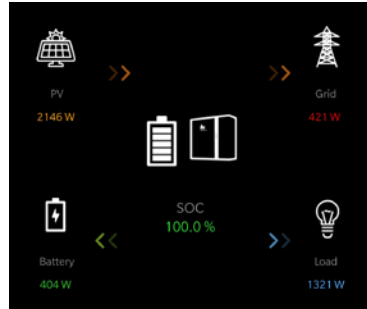
- **PV generation:** the total amount of generated electricity on that day.
- **Profit:** the income from feed-in electricity, self-consumption as well as peak-load shifting in a day.
- **Self-consumption ratio:** (PV total generation-total electricity sold / PV total generation).
- **Self-sufficiency ratio:** (Load total consumption – total grid consumption) / Load total consumption.
- **System energy conservation and environmental protection data:** Carbon dioxide emission reduction data and its equivalence to the number of trees planted.

Real-time Power Diagram (Homepage):

Select the Homepage to view the Real-time power diagram. The figure shows the real-time power diagram for a demo system. All values are displayed in Watts (W).

Description:

- **PV:** Real-time Solar generation.
- **Grid:** Real-time feed-in (arrow facing towards grid) or grid-consumption (arrow facing towards loads).
- **Battery:** Real-time Battery charge and discharge.
- **Load:** Real-time Overall house Load
- **SoC:** Real-time battery capacity (%.)



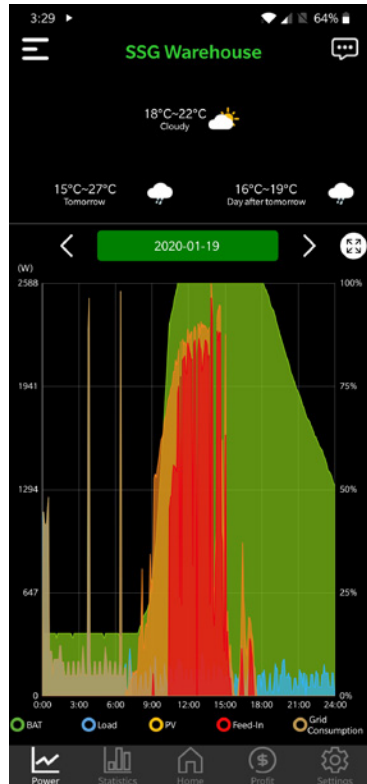
Power Diagram:

Click Power on the home page, to view the power map for a specific time period as shown in the below figure. All values are in Watts (W).

Description:

- **Orange:** (PV): PV generated electricity power.
- **Blue:** (LOAD): Overall House Load power.
- **Green :**(BATTERY): SoC % (battery capacity).
- **Red:** (FEED-IN): Grid feed-in power.
- **Brown:** (Grid Consumption): Actual consumption from the grid.

Users can choose the date above the graph to query the power data of a certain day. The diagram of a certain period can be zoomed in.



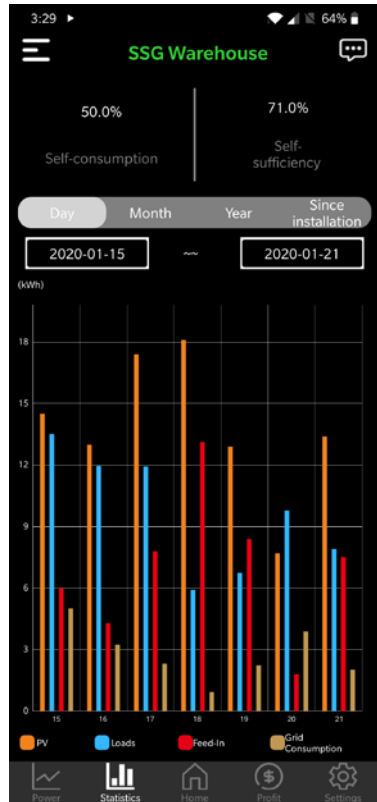
Statistical Diagram:

Click **Statistics** on the home page to view the Statistical Diagram. Select the energy graph or specific range of dates to view your historical data corresponding to that period. Users can toggle between Day, Month, Year and since Installation to view energy data, as shown.

Description:

All values are displayed in kWh.

- **Orange:** (PV Generation): Total PV generation.
- **Red:** (Feed-in): Total grid feed-in electricity.
- **Blue:** (Loads): Total load consumption.
- **Brown:** (Grid Consumption): Actual consumption from the grid.



Profit Diagram:

Click on **Profit** on the homepage to view the Profit Diagram. Select the graph or specific range of dates to view your historical data corresponding to that period. Users can toggle between **Day**, **Month**, **Year** and **since Installation** to view appropriate profit data, as shown below.

The app also displays the Total Income and Total Investment depending on the Values set by the user/installer.

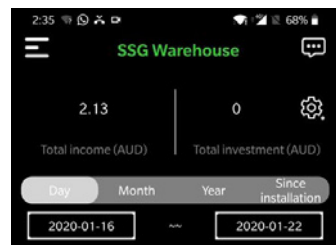
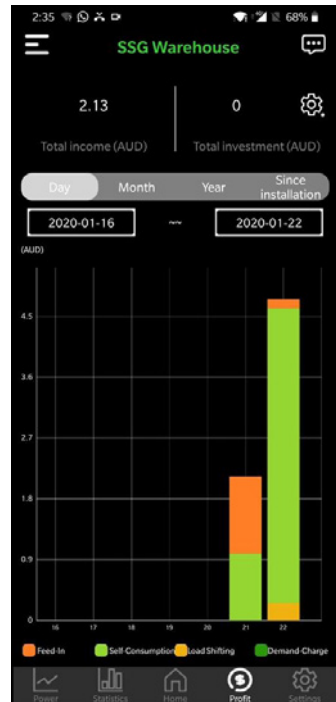
Description:

All values are calculated in \$, as set by the customer/installer.

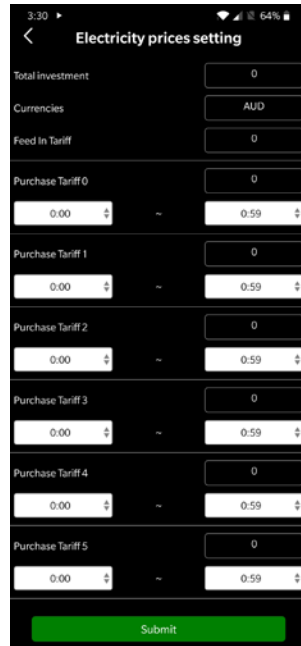
- **Feed-in:** Income from grid feed-in (as per applicable feed-in tariff).
- **Self-consumption:** Income from Solar PV-generation.
- **Load shifting:** For Time-of-Use tariff users, this value corresponds to the Income generated from charging the battery during Off-peak hours (at low electricity price) and discharging towards the loads during Peak / Shoulder hours (at high electricity price)

Electricity Prices Settings:

Within the Profit diagram page, users can select their Electricity Price Settings by clicking the Settings (Scroll Wheel) icon on the top-right hand side corner of the page.



On this page, you can set electricity purchase price, purchase period, Feed-in tariff price and currency, then click “save”.



3:30

Electricity prices setting

Total Investment

Currencies

Feed In Tariff

Purchase Tariff 0

Purchase Tariff 1

Purchase Tariff 2

Purchase Tariff 3

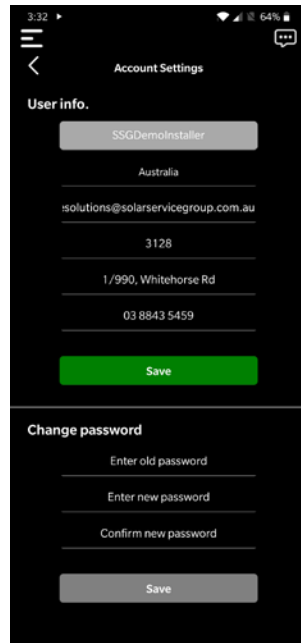
Purchase Tariff 4

Purchase Tariff 5

Submit

User Information Settings:

The user can update Personal Information including Country, Email address, City, Detailed address and Contact number and click Save once completed.



3:32

Account Settings

User info.

SSGDemoInstaller

Australia

solutions@solarservicegroup.com.au

3128

1/990, Whitehorse Rd

03 8843 5459

Save

Change password

Enter old password

Enter new password

Confirm new password

Save

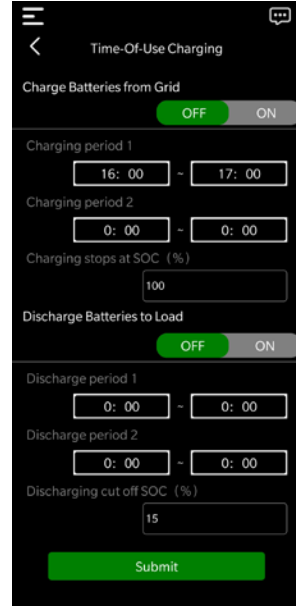
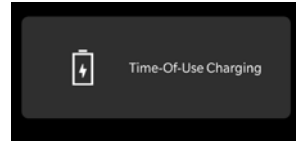
Change Password:

Enter Old and New Passwords and Select Save, to update accordingly.

System Setup:

Users that are on a ToU (time of use tariff) with their electricity retailers can activate the ToU charge function on the **HIVE Solar Battery**, that allows for charging during Off-peak hours (at low electricity prices) and discharging towards the house loads during Peak / Shoulder hours (at high electricity prices). This feature can be accessed by selecting **Setting** from the homepage, and then **Time-Of-Use Charging**.

- Select Charge Batteries from Grid – ON
- Under Charging Period 1, select START and END times corresponding to the user's requirements.
- Users can have up to 2x specified charge periods.

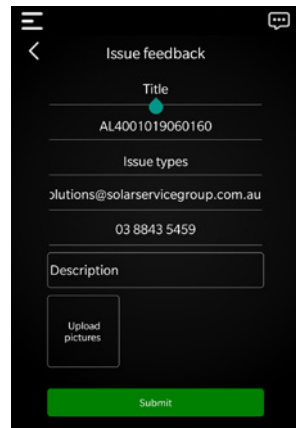


Customer Feedback:

The **Customer Feedback** can be accessed within the **Main Menu** (top-left hand side). Users can utilise this feature to communicate their grievances/system faults directly with the manufacturer.

Pathway:

Homepage > Main menu > Feedback



CHAPTER 6

Emergency Situations

Please follow the below instructions in case of an emergency,

6.1 Emergency Handling Plan

- Disconnect the Main Switch – Energy Storage (C20, Battery) within the switchboard
- Disconnect the Main Switch – Normal Supply of the building/premises.
- Please record every detail related to the fault, so your system provider/Alpha ESS can analyse and offer suitable resolution. Any operation of equipment during a fault is strictly forbidden, please contact Alpha as soon as possible.
- The battery cells are designed with explosion-proof valves and retain very small amounts of Oxygen thereby reducing the risk of an explosion.
- When the indicator +light on the battery shows a red fault, check the fault type (Section 4.2) and contact our after-sales service personnel for advice.
- Please follow emergency handling plan and contact 1300 968 933 for further assistance.

6.2 Fire

In case of fires, only firefighters with appropriate Protective Equipment are permitted to access the Battery installation area. Please ensure that the following equipment is available near the system.

- SCBA (self-contained breathing apparatus) and protective gear in compliance with the Directive on Personal Protective Equipment 89/686/EEC.
- Novec 1230, FM-200, or dioxide extinguisher.

Note: ABC extinguishers are not effective when the battery pack is on fire. Batteries may explode when heated above 150°C. If possible, move the battery pack to a safe area before it catches fire.

6.3 Leaking Batteries

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed to the leaked substance, immediately perform the actions described below.

- **Inhalation:** Evacuate the contaminated area and seek medical attention.
- **Contact with eyes:** Rinse eyes with running water for 5 minutes and seek medical attention.
- **Contact with skin:** Wash the affected area thoroughly with soap and water and seek medical attention.
- **Ingestion:** Induce vomiting and seek medical attention.



6.4 Wet Batteries

If the battery pack is wet or submerged in water, do not let people access it, and then contact the manufacturer or an authorised dealer for technical support.

6.5 Damaged/ Decommissioning Battery

Damaged batteries are dangerous and must be handled with the utmost care.

- They are not fit for use and may pose a danger to people or property.
- If the battery pack seems to be damaged, contact Alpha ESS (or an authorised dealer) to organise an authorised electrician to remove the battery and return the product for further troubleshooting.
- If the battery needs to be decommissioned, please refer to the local/national codes and standards applicable. If you require further information, contact Alpha ESS.

Note: Damaged batteries may leak electrolyte or produce flammable gas. If such a damage occurs, immediately contact the manufacturer.

CHAPTER 7

Warranty Conditions

For the Alpha ESS Product Series

Important Note: Australian Consumer Law

If you have purchased your product in Australia, you should be aware that: This warranty is provided in addition to other rights and remedies held by a consumer at law. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Warranty

Subject to the terms and conditions detailed below, we provide a voluntary product warranty (the Warranty) to end users of the following products (the Products) which are supplied by us in Australia and New Zealand:

- Storion-SMILE-B3 (HIVE or Goanna) system including battery inverter and batteries

No other voluntary manufacturer's warranty shall be provided by us. This Warranty does not apply to anyone who has purchased the Products for the purposes of resale.

This Warranty is non-transferable except where the Products are installed in a building, this Warranty will then transfer to any subsequent purchaser of that building or of the Products so long as the Products remain installed.

This Warranty only applies where Products have been installed by a properly certified battery installer (CEC approved), and correctly followed the installation manual.


General Terms

We warrant that we will repair or replace (at our option) a Product or any part thereof, if such Product is faulty or defective in manufacture or materials for a period of five years from the date of purchase.

We will endeavour to replace Products with identical products. However, due to technological advancements, that Product may not be available. In these cases, we will supply another type of product of at least the same value and standard, although the replacement product may be a different size, shape, colour and/or capacity. Due to technical advances it is possible that replacement parts or components may not be compatible with the other components already installed. Any costs relating to the incompatibility of systems is not covered by this Warranty.

If the products are replaced within the warranty period, the remaining warranty period will be automatically transferred to the replacement products. In this event, you will not receive a new certificate.

It is required that all systems have internet connection for monitoring. Those systems that are not connected to the internet the warranty is then reduced to three years.



Each time a warranty claim is made against a system that has no internet connection, the installer or the end user is obliged to organise a qualified personnel to conduct an on-site inspection and data collection under the instruction of Alpha ESS.

We monitor systems and inform end customers via internet in the event of defects in the material or workmanship of the product within the warranty period. For systems with no internet connection, the end customer should inform us ASAP if a product is found to be defect in order to qualify for repair or replacement under the warranty.

This Warranty only covers repair or replacement of the defective product.

It does not cover:

- Any costs incurred by the end-user or the installer in normal or scheduled maintenance of the Product; or
- Any other costs such as transportation, travel and accommodation cost of personnel etc.;
- Subject to any law to the contrary, any damage to property, personal injury, direct or indirect loss, any consequential losses or other expenses arising from breach of this Warranty.

Battery Performance Guarantee

Upon the granting of the Warranty (with internet connection), we guarantee as follows:

For systems operate under self-consumption mode, we warrant that each battery module retains at least eighty percent (80%) of its usable capacity for 120 months from the earlier of

- (i) the date the battery storage system is installed at the end user's property or
- (ii) the date two months after the Product being sold to another business or personnel.

For other applications, the warranty can expire earlier if a total energy of 2.92MWh per kWh usable capacity has been dispatched from the battery.

The usable capacity at the time of installation is 96% of nominal energy as stated on the data sheet.

Conditions


This Warranty is subject to the following conditions:

- The Products must have been installed and correctly commissioned by an authorised and licensed installer. Proof may be required of correct commissioning of the Product (such as certificate of compliance). Claims for failures due to incorrect installation or commissioning are not covered under this Warranty.
- Where a Product or part thereof is replaced or repaired under this Warranty, the balance of the original Warranty period will apply. The replacement product or part(s) do not carry a new voluntary warranty.
- The Product must have its original serial number and rating labels intact and readable.
- This Warranty does not extend to any Products that have been completely or partially disassembled or modified, except where such disassembly is carried out by Alpha ESS.
- The terms of this Warranty cannot be amended except in writing by one of our authorised officers.
- This Warranty only applies to Products purchased by an end-user from us directly or a reseller where the Products have been sold to the reseller by us directly.
- Any warranty claim under this Warranty must meet the requirements set out below in the “How to Make a Warranty Claim” section.
- There must have been a commissioning report signed by the end-user and the installer for product commissioning and handling instructions.

Exclusions

This warranty will not apply to a defect or fault to the extent to which one or more of these conditions arises:

- Due to storage, handling, installation (or removal and/or re-installation) or commissioning of the Product otherwise than in accordance with instructions provided by us, applicable safety regulations or without reasonable care including installation of a Product which is of an inappropriate size or type for the intended purpose;
- Due to operation, use or maintenance of the Product otherwise than in accordance with instructions provided by us or without reasonable care (including failure to maintain / clean the Product in accordance with recommendations in instruction / operation manuals);

- 
- Due to accidental damage, theft or vandalism, or use of the Product for a purpose or in environmental conditions for which the Products were not designed for or sold, or use of the Products outside the specified or normal operating ranges for such Products;
 - As a result of changes which occur in the condition or operational performance of the Product due to climate or other environmental influence, foreign material contamination (e.g. dirt, smoke, salt, chemicals and other impurities), water entry, exposure to excessive heat or solvents or because of use of the Product with insufficient ventilation (in particular the maximum temperatures according to the operating manual), exposure to strong vibrations, exposure to a strong magnetic field or damage as result of Force Majeure event;
 - From normal wear and tear or when replacement or repair of parts would be part of normal maintenance or service of the Product or where the damage is only to surface coating, varnish or enamel;
 - As a result of repairs, alterations or modifications to the Product which have been performed by a third party not authorised by us;
 - From the use of any spare parts not manufactured, sold or approved by us in connection with the repair or replacement of Product; or as a result of the interconnection of the Product with products of another manufacturer; or as a result of any other defective or malfunctioning parts in the system into which the Product has been installed;
 - Where the nameplate or serial number of the Product is modified, altered or not readable;
 - If damage has occurred during transportation; or
 - Other damages not affecting energy generation, and which are of a visual nature (e.g. surface scratching).

This Warranty does not apply to damage caused by continued use of the Product after it is known, or would have been known with regular servicing, it is defective.

Customer's assistance in returning the faulty unit:

Following the receipt of the replacement unit, the customer must return the allegedly faulty unit in the same packaging material as the replacement unit. Alpha ESS will supply all labels, documentation and freight details for the return of the allegedly faulty unit. All allegedly faulty inverters must be returned within 10 (ten) working days of the receipt of the replacement unit. A qualified installer must be available for the unit exchange and re-commissioning. The replacement unit will be covered by the original warranty terms of the faulty unit for the remaining warranty period of the faulty unit.

Wrong Deliveries and Transit Damage:

Wrong deliveries, incorrect or damaged packing and transit damage claims are not warranty claims. Such cases should be referred to Customer Service on www.alpha-ess.com.

How to Make a Warranty Claim:

If a Product fails within the Warranty period, the end-user must stop using the Product or the system in which the Product is installed as the case may be by isolating the Product from any energy source, make a claim as soon as possible and follow all instructions provided by us, our representative or agents.

To make a Warranty claim under this voluntary warranty, the end-user must contact us by the customer feedback system in online monitoring:

<https://service.AlphaESS.com/Common/ComplaintsProcessing/Index> or by email at info@alpha-ess.com.

When contacting us by the online monitoring, please fill in the relevant form;


When contacting us by email, please have the following information to hand:

- Your name, address, postcode and a telephone number where you can be contacted.
- The model designation and serial number of the Product (you can find both on the Product).
- Proof of purchase with date and address of the vendor.
- Installation date and installation address.
- Signed commissioning report or protocol.
- Contact details of the installer.
- A complete and detailed list of observed faults and other information which could help with the analysis of the fault (e.g. any modifications).

Costs of Submitting a Warranty Claim:

For invalid claims under this Warranty, we will not be liable for the end-user's costs in making the warranty claim, including transport or return freight.

In respect of valid claims under this Warranty, the end-user will not be charged for reasonable costs associated with the making of a warranty claim, including warranty processing costs. The cost of replacement parts or freight, and labour cost associated with the Products removal and installation. Reimbursement for necessary and reasonably incurred costs or expenses in making valid warranty claims under this Warranty may be claimed from us. For labour costs reimbursement under a valid



warranty claim, it will be limited to maximum A\$135 plus GST per claim. Documentary evidence in support of such claim will be required.

Deadlines for Submitting Warranty Claims:

We aim to rectify genuine quality problems as a priority. This is generally achieved by investigating why defective products have failed and by introducing immediate corrective action measures to prevent re-occurring of the warranty failures. It is therefore critical that all claims under this Warranty are promptly submitted to us as soon as the Product fails, and in any event, within three months of knowledge of the matter of event giving rise to the claim. No consideration will be given to claims under this Warranty which are made after this period.

Product Liability and Product Safety:

We should be informed immediately about any potential product safety concerns within and outside the warranty period. We are well aware of our product liability and product safety obligations and responsibilities. It is our aim to ensure appropriate product safety standards are met in order to avoid injury, loss and damage caused by defects in any Product.

Miscellaneous:

This Warranty shall form part of the purchase contract in respect of the Product between us and the end-user and shall be complied with by both parties.

Contact Details:

This warranty is offered by [Alpha ESS Australia Pty. Ltd., Suite 1, Level 1, 530 Botany Road, Alexandria, NSW, 2015].

For any questions, please contact +61 1300 968 933.

CHAPTER 8

Safety Data Sheets

Section 1. Identification

Product Identifier:

Product Name: Energy Storage System
Rechargeable Lithium-ion Battery

Models: Storion-SMILE-B3
M4856-P

Other Means of Identification:

SDS #: SDS002
SDS003

Synonyms: Lithium Iron Phosphate (LiFePO₄, LFP)
Proper Shipping Name (ADG Code): Lithium Ion Battery
Lithium Ion batteries contained in equipment

UN/ID No: UN3481
UN3480

Recommended Use of the Chemical and Restrictions on Use:

Recommended Use Energy Storage; Battery Packs

Details of Manufacturer or Importer:

Alpha ESS Australia PTY. Ltd.
Suite 1, Level 1, 530 Botany Road, Australia, Alexandria, NSW, 2015
+61 (0) 402 500 520
australia@alpha-ess.com
www.alpha-ess.com

Emergency Phone Number:

Emergency Telephone (24 hr) +61 1300 968 933 (Australia)



Section 2. Hazards identification:

Classification of the hazardous chemical:

EXEMPT FROM HAZARD CLASSES AND CATEGORIES ACCORDING TO AUSTRALIAN GHS.

Label elements, including precautionary statements:

No signal word, pictograms, hazard or precautionary statements have been allocated according to GHS.

But there is other label for Transport of Dangerous Goods on package.

Other hazards:

This product is an equipped with a Lithium Iron Phosphate Battery, which is certified compliance under the UN Recommendations on Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3. For the battery cell, chemical materials are stored in a hermetically sealed metal case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage. However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by misuse, the gas release vent will be operated. The battery cell case will be breached at the extreme. Hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acrid or harmful fume may be emitted.

Section 3. Composition and information on ingredients

Chemical Name	CAS No	Weight [%]
SPCC-Fe	7439-89-6	22-26
Lithium Iron Phosphate (LFP)	15365-14-7	15-17
Iron	7439-89-6	14-17
Lithium Hexafluorophosphate	21324-40-3	10-12
Copper Metal	7440-50-8	8-12
Carbon	7440-44-0	3-5
Aluminium Metal	7429-90-5	5-9
Polyester Resin	63148-65-2	3-5
Acrylonitrile-butadiene-styrene (ABS)	9003-56-9	1-3
Polyvinylidene Fluoride	24937-79-9	1-3
Polycarbonate	25037-45-0	1-3
Nickel	7440-02-0	0-1

Section 4. First aid measures

Description of necessary first aid measures:

Eye Contact	Rinse eyes with flowing water for 15 minutes and seek medical attention.
Skin Contact	Wash the affected area thoroughly with soap and water for 15 minutes and seek medical attention.
Inhalation	If internal contents are inhaled, evacuate the contaminated area, and seek medical attention.
Ingestion	If ingestion of internal contents occurs, rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration and continue to rinse mouth with water. Seek medical attention immediately.



Symptoms caused by exposure:

Symptoms – Adverse effects not expected from this product. Exposure to battery contents may cause irritation and potential burns.

Medical attention and special treatment:

Notes to Physician Treat symptomatically.

Section 5. Fire-fighting measures

Suitable extinguishing media:

In case of fire suitable extinguishing media: carbon dioxide or dry chemical. Use Novec 1230, FM-200, or dioxide extinguisher.

ABC extinguishers are not effective when the battery pack is on fire.

Special hazards arising from chemical:

Contents react with water. May explode if exposed to high temperatures due to pressure build up in battery casing. Lithium may burn in a fire situation and may be ejected from the battery. Damaged cells may evolve toxic and flammable vapours.

Specific protective equipment and precautions for firefighters:

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) and protective gear in compliance with the Directive on Personal Protective Equipment 89/686/EEC when combating fire. Use water fog to cool intact containers and nearby storage areas.

Hazchem code:

4 – Dry Agent (water MUST NOT be allowed to come into contact with substance).

W – Risk of violent reaction or explosion. Wear liquid-tight chemical protective clothing and breathing apparatus. Contain spill and run-off.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Wear Personal Protective Equipment (PPE) as detailed in SECTION 8 of this SDS.

Environmental precautions:

See SECTION 12 for additional Ecological Information.

Methods and materials for containment and cleaning up:

If spilt, collect and reuse where possible. If battery is broken or damaged, absorb liquid with sand or similar. Contain spillage, then collect and place in suitable containers for disposal. CAUTION: Avoid exposure to contents. For waste disposal, see SECTION 13 of the SDS.

Section 7. Handling and storage

Precautions for safe handling:

Before use carefully read the product manuals Use of Safe Work Practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

Conditions for safe storage, including any incompatibilities:

Store tightly sealed in a cool, dry, well ventilated area, removed from water, incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Store within the recommended limit of -20°C to 45°C. Do not expose to high temperature (55°C). Since short circuit can cause burn hazard or safety vent to open, do not store with metal jewellery, metal covered tables, or metal belt.

Section 8. Exposure controls / Personal protection

Exposure control measures:

This product presents no health hazards to the user when used according to label directions for its intended purposes.

Biological monitoring:

Ingredient	Determinant	Sampling Time	BEI
Polyvinylidene Fluoride	Fluoride in urine	Prior to shift	2 mg/L
	Fluoride in urine	End of shift	3 mg/L

Reference: ACGIH Biological Exposure Indices

Control banding:

Control banding is not used.

Engineering controls:

Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fume and vapour.

Personal protective equipment (PPE):

Eye Protection: Not necessary under normal use. Wear safety goggles if handling a ruptured or leaking battery cell.

Skin Protection: Not necessary under normal use for hands and body. Wear PVC or rubber gloves if handling a ruptured or leaking battery cell.

Respiratory Protection: Not necessary under normal use. In case of battery or cell rupture, use a self-contained full face respiratory mask.

Section 9. Physical and chemical properties

Appearance:	Battery	Physical state:	Solid
Colour:	Not Determined	Ph:	Not Determined
Odour type:	Odourless	Odour threshold:	Not Determined
Melting point:	Not Determined	Freezing point:	Not Determined
Boiling point:	Not Determined	Boiling range:	Not Determined
Flash point:	Not Determined	Evaporative rate:	Not Determined
Flammability:	Not Determined	Flammability/ explosive limits:	Not Determined
Oxidizing properties:	Not Determined	Viscosity:	Not Determined
Relative density:	Not Determined	Auto-ignition Temperature	Not Determined
Solubility in Water:	Insoluble	Partition coefficient: n- octanol /water	Not Determined
Water/ oil distribution coefficient:	Not Determined	Vapour pressure	Not Determined
Decomposition temperature:	Not Determined	Vapour density: (air = 1)	Not Determined
Saturated vapour concentration:	Not Determined	Specific heat value	Not Determined
Particle size:	Not Determined	Release of invisible flammable vapours and gases	Not Determined
Size distribution:	Not Determined	Shape and aspect ratio	Not Determined
Crystallinity:	Not Determined	Dustiness	Not Determined
Surface area:	1.35 m ²	Degree of aggregation or agglomeration and dispersibility	Not Determined
Redox potential:	Not Determined	Bio durability or bio persistence	Not Determined
Surface coating or chemistry:	Polyester Resin		



Section 10. Stability and reactivity

Reactivity:

Not Available.

Chemical Stability:

Stable under normal use.

Possibility of hazardous reactions:

Polymerisation will not occur.

Conditions to avoid:

Heat above 70°C or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Recharge. Short circuit. Expose over a long period to humid conditions.

Incompatible materials:

Battery contents are incompatible with water (evolving flammable gas), oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), alkalis (e.g. sodium hydroxide), heat and ignition sources.

Hazardous decomposition products:

May evolve hydrogen and lithium oxides when heated to decomposition.

Section 11. Toxicological Information

Information on likely routes of exposure:

Acute toxicity.

Information available for the product:

No specific acute toxicity data exists for this product. Batteries consist of a hermetically sealed metallic container containing a number of chemicals and materials of construction that may be hazardous upon release. Over exposure considered unlikely unless battery ruptures and contact with contents occurs. Contents may be harmful.

Inhalation: Toxicity data and effects of inhalation exposure are not available.

Not a likely route of exposure under normal use.

Ingestion: Toxicity data and effects of ingestion exposure are not available.
Not a likely route of exposure under normal use.

Skin Contact: Toxicity data and effects of skin contact exposure are not available.
Not a likely route of exposure under normal use.

Eye Contact: Toxicity data and effects of eye contact exposure are not available.
Not a likely route of exposure under normal use.

Component information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Carbon 7440- 44-0	> 8000 mg/kg (rat)	-	-

Early onset symptoms and delayed health effect from exposure:

Please see SECTION 4 of this SDS for symptoms.

Numerical Measures of Toxicity:

Not determined.

Section 12. Ecological Information

Ecotoxicity:

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability:

Not determined.

Bioaccumulative potential:

Not determined.

Mobility in soil:

Not determined.



Other adverse effects:

Not determined.

Section 13. Disposal considerations

Disposal Methods:

Disposal of Wastes.

Recycling is encouraged. Do NOT dump into sewage or water bodies. Dispose of in accordance with local, state and federal laws and regulations.

Contaminated Packaging:

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Section 14. Transport information

Alpha ESS Product listed in Section 1 is designed to comply with standard international shipping regulations including the UN Recommendations on the Transport of Dangerous Good; the IATA Dangerous Goods Regulations and the International Maritime Dangerous Goods Code.

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
UN Number	3481	3481	3481
Proper Shipping Name	Lithium Ion Batteries packed contained in equipment	Lithium Ion Batteries packed contained in equipment	Lithium Ion Batteries packed contained in equipment
Transport Hazard Class	9	9	9
Packing Group	II	II	II
	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
UN Number	3480	3480	3480
Proper Shipping Name	Lithium-Ion Battery	Lithium-Ion Battery	Lithium-Ion Battery
Transport Hazard Class	9	9	9
Packing Group	II	II	II

Hazchem or Emergency Action Code:

4W



Section 15. Regulatory information

Safety, health and environmental regulations

Poison schedule:

A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications:

Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes – None allocated.

Risk phrases – None allocated.

Safety phrases – None allocated.

Inventory listing(s):

AUSTRALIA: AICS (Australian Inventory of Chemical Substances)

All components are listed on AICS, or are exempt.



HIVE

SOLAR BATTERIES