

INSTRUCTION MANUAL



Welcome to your new Invicta Lithium LiFePO₄ Battery.

Please read the instructions and warning on this card carefully to ensure you get the most out of your battery.

Warnings

- Keep battery away from exposure to heat, high voltage and direct sunlight.
- Never short circuit the positive and negative terminals.
- Never ship or store battery along with metal.
- Never disassemble the battery.
- Never knock, throw or impact the battery.
- Never throw the battery into water.
- Never install in under bonnet applications.
- Never install in a starting application
- Always use a charger with a Lithium profile and ensure that it has been selected
- If using an inverter, ensure that it does not exceed the specifications of the battery

Tips

- If battery cuts out on low voltage immediately disconnect load
- A low voltage cut off device is strongly recommended and set to the voltage as shown on page 3 of this manual
- If the battery goes below the over-discharge protection voltage (as indicated on page 3) or the over-discharge protection is activated, charge battery within 15 days.
- Battery should be charged every 6 months.
- Ideal storage temperature -20°C - 35°C
- Do not leave battery in low state of charge for long periods of time.
- Keep battery away from high temperatures
- If battery shows signs of deformation, heat or emits smell, immediately discontinue use.

Warranty

Invicta has a 7-year full replacement warranty when installed in an approved application. Please refer to your warranty card or invictalithium.com.au and register your battery to ensure your battery is in an approved application. A copy of the warranty statement can be found at www.invictalithium.com.au/warranty-statement/.

Charging

- Always use a battery charger with a lithium profile that does not exceed the charging specifications of the battery
- Charger must not contain Sulphation/Equalisation setting. If so then this needs to be turned off.
- The charging table below should be followed when charging

Battery Voltage	12V	24V	36V	48V
Max Charge Voltage	14.6V	29.2V	43.8V	58.4
Float Charge Voltage	13.8V	27.8V	41.4V	55.2

- Do not have batteries sit on float charge for an extended period of time.
- Please ensure your charger is matched to the current rating of your battery and take note of the recommended charge current in the batteries specification sheet - Normally half the batteries rated capacity. For example SNL12V100S - Recommended charge current = 50A.
- We will only warrant the battery if a Lithium (LiFePO4) profile charger has been used
- For specifications for your battery please visit invictalithium.com.au

Waking up battery from over-discharge

If the battery is over-discharged this will cause it to drop below its operational voltage and the BMS will activate, putting the battery into protection mode.

To identify whether your battery is in protection mode you can check the voltage using a multimeter, if the battery is below 5V then the BMS is in protection mode. In Bluetooth models the mobile application can be used.

To wake the battery up use a charger with a lithium profile and an inbuilt wake up function.

A low-voltage cut-off device is recommended and set to the below voltages to avoid the battery going into protection mode. If you continue to experience issues please contact our support team on 1300 001 772 or sales@spb.net.au

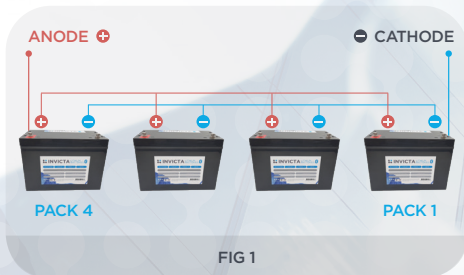
Battery Voltage	12V	24V	36V	48V
BMS Over-discharge Protection Voltage	10V	20V	30V	40V
Low-Voltage cut-off device setting	11V	22V	33V	44V

Series and Parallel of batteries

There are strict conditions under which the Invicta Lithium Range can be configured into Series OR Parallel systems. Please note these conditions below.

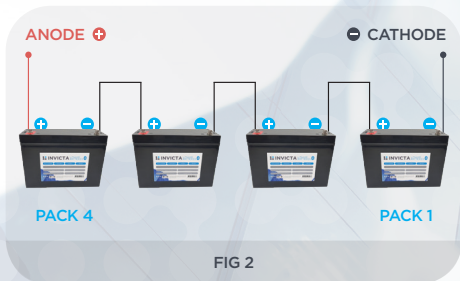
- Not all SNL batteries can be configured into a Series or parallel system. Please note the part number of the battery. If the Part number contains an "S" suffix example SNL12V100S. Then this denotes that the battery can be configured into a system of up to, but not exceeding 4 batteries in Series.
- If the part number does not end in an "S" for example SNL12V100BT, then series configuration is strictly prohibited.
- All Invicta lithium batteries can be configured into a parallel configuration up to 4 units in parallel under the conditions outlined in the following pages.

Parallel Configuration



1. Ensure all batteries to be in the parallel configuration have been fully charged individually by matched chargers.
2. Ensure OCV of each battery is less than $<0.2V$ of each other.
3. After charging, set aside and allow to rest for 8 hours.
4. Utilising wires of circumference large enough to carry required current ($>100A$), connect the batteries in the above (Fig 1) configuration. Ensure all connecting cables lengths are of the same length.
5. Be careful not reverse connect the Positive and Negative.
6. Ensure correct charge voltage and current is utilised for configuration.
7. It is absolutely prohibited to series a paralleled configuration.
8. Once in Parallel configuration ensure a full charge is completed a min of every 3 months
10. Once in Parallel configuration, the system must be charged and discharged as a system. If one batteries needs to be replaced, the whole system will require replacing.

Series Configuration



1. Check Part number contains an "S" on end to ensure the battery is suitable for Series configuration.
2. Ensure all batteries to be in the series configuration have been fully charged individually by matched chargers
3. Ensure OCV of each battery is less than $<0.2V$ of each other.
4. After charging, set aside and allow to rest for 8 hours.
5. Utilising wires of circumference large enough to carry required current ($>100A$), connect the batteries in the above (Fig 2) configuration. Ensure all connecting cables lengths are of the same length.
6. Be careful not reverse connect the Positive and Negative.
7. Ensure correct charge voltage and current is utilised for configuration:
 - B. Two batteries in Series - 29.2
 - C. Three Batteries in Series - 43.8V
 - D. Four Batteries in Series - 58.4V
8. It is absolutely prohibited to parallel a series configuration.
9. Once in Series configuration ensure a full charge is completed a min of every 3months
10. Once in Series configuration, the system must be charged and discharged as a system. If one batteries needs to be replaced, the whole system will require replacing.

Bluetooth App download

The Bluetooth versions of the Invicta Lithium range are indicated by a “BT” at the end of the part number e.g. SNL12V100BT.

App Download – Apple Store

1. Go to App Store on your mobile device.
2. Select the “Search function” which is the magnifying glass icon.
3. In the search field type “Invicta Lithium”.
4. The Invicta lithium – SPB Sealed Performance Batteries app icon will appear.
5. Select the download button and enter your iTunes password.

App Download – Google Android

1. Go to “Play Store” on your mobile device.
2. Select the “Search function” which is the magnifying glass icon.
3. In the search field type “Invicta”.
4. The Invicta lithium – SPB Sealed Performance Batteries app icon will appear.
5. Select the download button and enter your Google Play password.

In-Application Passwords

To gain access to some areas of the application a password is required. To obtain this password please send a request to info@spb.net.au and this will be sent to you.

Contact Details and Information

A range of resources can be found at invictalithium.com.au. This includes specifications, product registration and our warranty statement. If you require further assistance with your Invicta battery, please contact the team at Sealed Performance Batteries (SPB) on 1300 001 772 or info@spb.net.au.

Invicta is a brand of SPB, a company that has over 25 years experience in energy storage and are located in Brisbane, Sydney and Melbourne. For more information on SPB please visit spb.net.au