

INSTRUCTION MANUAL



Welcome to your new Invicta Hybrid Starter LiFePO4 Battery.

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

Warnings

- Keep away from direct 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 submerge the battery into water.
- Never place the battery in fire
- Ensure it is charging within the parameters of the battery
- Do not charge the battery if it is below 5V
- Do not charge or jump start the battery when the Jump Start feature is activated
- Do not exceed the discharge parameters of the battery
- Do not reverse the polarity of the battery

Tips

- The Invicta Hybrid Starter battery is primarily a starting/cranking battery that has deep-cycle capabilities.
- If the battery goes below the over-discharge protection voltage 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 of 80°C or more
- The Jump Start feature can also be used to wake the battery up from sleep mode during charge
- If battery shows signs of deformation, heat or emits smell, immediately discontinue use.

Warranty

Invicta Hybrid Starter batteries have a 3-year full replacement warranty, If you would like to register your battery you can do this via the Invicta Lithium website www.invictalithium.com.au/warranty-registration/. A copy of the warranty statement can be found at www.invictalithium.com.au.

If you are unsure if your battery will be covered under warranty in its current application or if you are having issues with your Invicta battery, please contact the team at SPB on 1300 001 772 or info@spb.net.au

Charging

- The Invicta Hybrid Starter can be charged from most car alternators, AC-DC and DC-DC chargers with or without a lithium setting.
- Avoid charging the battery with the Jump Start feature activated
- If the battery is in sleep mode, you may need to wake the battery up using the Jump Start feature in order to charge.
- 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 SNLH80D (60Ah) – Recommended charge current = 30A.
- For specifications for your battery please visit invictalithium.com.au
- To fully charge a lithium battery to 100% you will need a lithium specific charger.
- We recommend a top-up charge using a lithium specific charger every 3 months. You will not void your warranty if you do not do this.

Using the Jump Start feature

The BMS in the Invicta Hybrid Starter will automatically reserve a small amount of capacity for the Jump Start feature. If the main capacity is over-discharge the BMS will put the battery into sleep mode to protect the reserve capacity. To activate the Jump Start feature and use the reserve capacity simply press the button on top of the battery until the light flashes red. This will release the reserve capacity for approx. 30 seconds and allow you to start your engine. Once the application is started allow the battery to charge for at least 15min before turning the engine off again.

We recommend you only use the reserve capacity for starting/cranking and do not charge the battery while this feature is activated. However, if your charger does not have a wake-up function you may need to activate the the Jump Start feature for charging to commence.

The Jump Start feature is not to be relied upon as an emergency feature and should only be used occasionally to avoid excessive wear and tear on the battery. If you do not have access to reliable power to start your application, every effort should be taken to ensure you can start your battery in an emergency.

Under-bonnet and high-heat applications

The Invicta Hybrid Battery is rated to be installed in high-heat applications. Although the battery can withstand high-heat, every effort should be made to ensure there is airflow around the battery to reduce the occurrence of BMS high-heat disconnect.

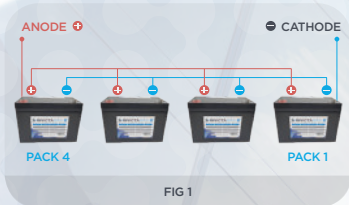
The high-heat disconnect will activate once the internal temperature of the battery reaches 80°C and reconnect at 60°C. Please see specification sheet for recommended operating temperatures.

Parallel configuration of batteries

There are strict conditions under which the Invicta Hybrid Starter range can be configured in Parallel systems. Please note these conditions below.

- Invicta Hybrid Starter batteries can only be paralleled in systems up to 6. **They cannot be placed in a series configuration.**

Parallel Configuration



1. Ensure all batteries to be in the parallel configuration have been fully charged individually by matched chargers and are the same models.
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.

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