

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, alter or drill the battery.
- Avoid direct impact to the battery.
- Never throw battery
- Never submerge the battery into water.
- Never place the battery in fire
- Ensure charge rate is within the parameters of the battery
- Do not exceed the discharge parameters of the battery
- Do not reverse the polarity of the battery

Tips

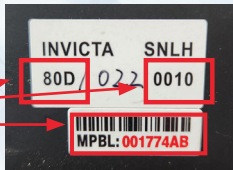
- The Invicta Hybrid Starter battery is primarily a starting/cranking battery that has deep-cycle capabilities.
- If the battery goes below the over-discharge protection voltage or the over-discharge protection is activated, charge battery within 15 days.
- Battery must be charged within 6 months of receipt
- Battery should be maintenance charged every 3 months to extend life
- Ideal storage temperature 20°C - 35°C
- Do not leave battery in low state of charge for long periods of time.
- Isolate battery from system if not in use for more than 7 days
- Keep battery away from high temperatures of 80°C or more
- The Jump Start feature can reserve starting capacity for up to 48 hours. After 48 hours an external jump start/charge may be required.
- If battery shows signs of deformation, heat or emits smell, immediately discontinue use.

Installation

- Inspect the battery for any damage and record your Bluetooth battery id and serial number

Bluetooth Battery Id (e.g.. 80D0010)

Serial # (e.g.. MPBL001774AB)



- Connect to the battery Bluetooth using the Invicta Hybrid app
- Check you have the right battery for your vehicle
- Check place of installation, ensuring it is clean and ready
- Ensure you have the right tools, equipment and PPE
- Ensure the application and any accessories are off
- Carefully lift and lower the battery using the handles supplied
- Do not over tighten any brackets, nuts, bolts or terminals.
- Hand tighten plus half turn is sufficient
- Connect negative cables to negative terminal and positive cables to positive terminal. Being careful not to short-circuit the battery.
- If paralleling the battery please follow the instructions in this manual
- If adding a deep-cycle battery, follow instructions in paralleling section
- Newer vehicles may require a flash tune and the smart alternator turned off - please refer to the Invicta Hybrid fitment guide for this.

Charging

- The Invicta Hybrid Starter can be charged from most car alternators.
- When using a AC-DC or DC-DC charger, a lithium setting is recommended.
- If using a solar charger, a MPPT regulator must be in use.
- If the battery is in sleep mode, you may need to wake the battery up using the Jump Start feature to enable charge.
- Please ensure your charger is matched to the current rating of your battery.
- Specifications for your battery can be found at invictalithium.com.au.
- To fully charge a lithium battery to 100% you will need to bulk charge the battery between 14.4V and 14.6V.
- We recommend a top-up charge using a lithium specific charger every 3 months.

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. When the main capacity is fully discharge the BMS will reserve the 'Jump Start' capacity for up to 48hrs. To activate the Jump Start feature and use the reserve capacity simply use the mobile app or press the button on top of the battery until the light flashes red one time. 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.

Before activating the Jump Start feature we recommend isolating any external loads (i.e. fridge, inverter, lights) to assist the starting capabilities.

The Jump Start feature is designed for convenience and not to be relied upon as your only and last resort for starting your vehicle. It should only be used occasionally to avoid excessive wear and tear on the battery.

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 over-temp disconnect.

The over-temp 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

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.**
- **All negative connections from accessories and ignition should go to battery one.**
- **All positive connections from accessories and ignition should go to battery two.**
- **If adding a deep-cycle battery to system, this must be seperated from the starter via a DC-DC charger (fuse-relay is required if DC-DC doesn't have inbuilt fuse-relay)**

Parallel Configuration cont.

1. Ensure all batteries to be in the parallel configuration have been fully charged individually and are all the same model.
2. Ensure the voltage difference between each battery is no more than 0.2V
3. After charging, set aside and allow to rest for 8 hours.
4. Cable sizing should be suitable for the load requirement. Ensure all connecting cables lengths are of the same length.
5. Be careful not to reverse the polarity of the poles or short circuit while connecting the cables.
6. It is absolutely prohibited to series a paralleled configuration.
7. Once in Parallel configuration ensure a full charge is completed a min of every 3 months
8. A parallel configuration must be a true parallel connection as shown below, any other parallel configuration may result in unexpeted issues and void the warranty.
9. All accessory and ignition negative cables should go to battery 1 and all positive cables to battery 2.
10. Once in Parallel configuration, the system must be charged and discharged as a system.

Parallel Side by Side

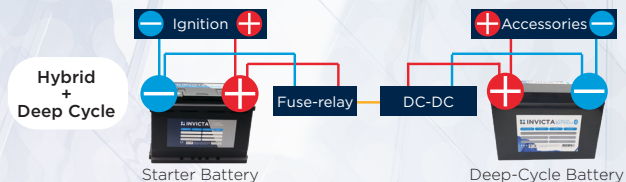


Parallel With Engine



Adding A Deep-Cycle Battery

1. Ensure all batteries to be in the configuration have been fully charged individually and are of the same voltage range and compatible with the DC-DC charger being used.
2. Check the user manual for the deep-cycle battery requirements
3. Cable sizing should be suitable for the load requirement. Ensure all connecting cables lengths are of the same length.
4. Be careful not to reverse the polarity of the poles or short circuit while connecting the cables.
5. A DC-DC charger must be used between the batteries. A charger with an inbuilt fuse relay is recommended.
6. Use the correct DC-DC charger between the batteries.
7. If the DC-DC charger does not have a fuse relay, one must be installed.
8. Ignition cables should go to the starter battery, as shown.
9. Accessory cables should go to the deep-cycle battery, as show.
10. Once in configuration ensure a full charge is completed a min of every 3 months.



Bluetooth Feature

All Invicta Hybrid Starter batteries come with Bluetooth connectivity. The app is available to download on the Apple Store and Google Play and is compatible with most smart phones.

To download the app you can scan the QR code. Ensure that you download the Invicta Hybrid App and NOT the Invicta Lithium app. The Invicta Lithium app will not work on Invicta Hybrid batteries due to the different features of each.

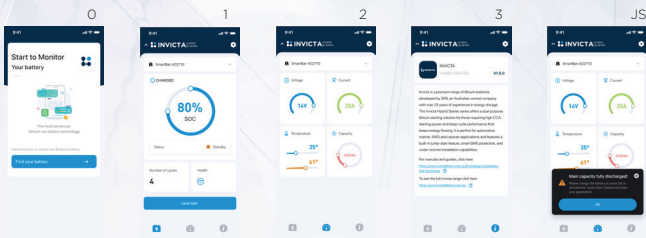
How To Use The Bluetooth Feature

1. Open the Invicta Hybrid app on your phone
2. Find and connect to the battery (if using multiple batteries refer to the Bluetooth battery id you recorded)
3. **Screen 1** - Capacity as a percentage, its status, and cycles. There are four status options (Standby/Discharge/Charge/Protection)
4. **Screen 2** - Voltage of battery, Current In/Out (+/-), Temperature (Orange internal temperature), Capacity shown as Ah.
5. **Screen 3** - Contact Details and general information
6. **Jump Start Feature** - Only available once battery has used main capacity. Reserve must be activated within 48 hours of being available



If you cannot connect to the battery Bluetooth, please check the following

- You have downloaded the correct app
- No one else is connected to the app
- Your Bluetooth is on and you have allowed location services



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

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're 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

To claim a warranty please return the product to your retailer or contact SPB and ensure you have your proof of purchase and serial number. Do not send the product without a Return Authority.