



### Battery Overview

Our Lithium Ion Rechargeable 36V Flat Pack Battery using Panasonic cells weighs only 2.5 kg. Maximum discharge current is 15A continuous, 20A for 10 seconds and 35A for 5 seconds. Maximum charge voltage is 42.5V.

The BMS (Battery Management System) technology protects packs from heat, voltage imbalance, under-voltage and over-current. The BMS dramatically improves cycle life and prevents battery fires and explosions.

### Battery Life

A battery's power is reflected in (Wh) Watt-hours. The more Wh there are the greater the potential power boost and likely range of the battery. Battery and electric bike manufacturers do tend to exaggerate when giving mileage per battery charge calculations but through experience we can say that our batteries give a minimum of 1 mile per 35Wh, this works out at 13.5 miles with our 13.5Ah flat pack 36V batteries.

Most manufacturers will give much higher mileage per charge figures than we have stated for a number of reasons. Tests carried out in a laboratory are under controlled conditions of constant temperature and at a constant discharge rate with each cycle being repeated immediately after the last one. Field-testing is carried out using two wheeled electric bikes whilst the user is utilising pedal assist.

A three-wheeled cycle is always going to be less efficient than a two-wheeled bicycle as the batteries have to work much harder to haul three wheels. The Viper battery has extra stress as it has to do all of the work whereas power assisted handcycles and bicycle batteries generally have a much easier life.

Other factors that dilute the battery packs miles per charge are varying types of terrain, headwinds, hills, rider weight, tire pressures, speed, temperature, stopping/starting and more.

From the information above it can be seen that it is virtually impossible to give an accurate guide on mileage per charge or an accurate guide to the number of cycles a battery can achieve. But as a general rule our batteries should return 500-600 cycles

### Battery Care

It is widely known that Li-ion batteries do not suffer from so called memory effect if they are charged when not fully depleted and can be charged at any time during the discharge state. Unlike Nicad or NiMH there is no benefit to periodically running a deep discharge on the pack for reconditioning.

Allow the battery to come down to room temperature before charging (do not charge the battery when the temperature is below 0 degree C/32F or above 50Degree C/122 degree F).

During charging, and LED light on top of the charger will change from red (indicating the battery is charging) to green (indicating the battery is fully charged). The charger and/or battery may get warm to the touch during charging, this is normal.

A full charge cycle from depleted should take around 4/5 hours.

When your batteries are not in use (for instance during the winter) make sure to charge them every 3 months. Store your batteries when not in use in a room temperature dry environment. Never leave your batteries in a hot environment such as a closed vehicle exposed to the sun.



Use only the mains battery charger supplied to charge the battery. Battery charger input voltage is 230V-110V.

The battery charger is designed for indoor use only. The Lithium ion battery may only be charged in a dry, non-flammable environment.

A mains battery charger with a damaged lead or plug must not be connected to the mains and must be repaired immediately by a specialist dealer.

Water and moisture must not be allowed to penetrate the mains charger or battery under any circumstances. If water has entered the charger or battery, disconnect it from the mains supply immediately and have it checked by a specialist dealer.

Condensation may form on the mains charger if there is a sudden change in temperature from cool to warm. If this happens, wait until the charger has come to room temperature before connecting to the mains supply.

### Battery Charging

There is always a certain amount of self-discharge, the battery should always be charged before being used for the first time.

The charge status is shown on the display. To check the status, briefly press the button on the top of the battery. Up to four LED lights will show for a few seconds to indicate the charge status.

- Make sure that the switch on the side of the battery is set to off.
- Gain access to the charging socket on the battery box by lifting the protective cover.
- Connect the plug on the battery charger to the socket on the battery.
- Plug the charger into the mains power outlet and switch on.
- The red light on the charger will show when charging then will turn green when fully charged.

### Important safety information

- Do not charge the battery above 42.5V.
- Do not heat or incinerate the battery.
- Do not pierce, crush or cause mechanical damage to the battery.
- Do not charge the battery at high temperature conditions or near a fire.
- Do not short circuit the battery.
- Do not dismantle the battery.
- Do not immerse in liquid.

Your batteries are sealed and do not require any maintenance. Do not attempt to open them or modify them in any way; doing so may result in fire, injury or damage to the batteries.

Although protected by the BMS (Battery management system) the danger of lithium batteries has been widely reported. An electric bike sized lithium battery pack contains sufficient stored energy and volatile material that significant heat release and damage occurs if something goes wrong.

Always assume the worst could happen and only charge the battery when you are around, or at the very least where any incident would be contained such as in a garage.

### Taking your battery on an aircraft

Currently li-ion battery packs with a capacity exceeding 300Wh are classified as Hazardous Material, Hazmat Class 9 and will not be allowed on aircraft except on cargo flights and then have to be packed in a carton approved with UN3841 (Lithium battery and Equipment). Our large battery packs do exceed this limit, 8Ah batteries 288Wh are available to purchase from us if you intend to fly with your cycle.

**Please check with the airline you intend to fly with before purchasing an 8Ah 288Wh battery as some airlines will only accept batteries with a capacity of 4.5Ah 160Wh. We do not sell batteries with a capacity under 8Ah 288Wh.**

### Battery Disposal

All batteries should be disposed of responsibly. Your Lithium battery is no exception, most local authorities offer recycling and disposal facilities.

