TSDZ2 Mid-drive

Installation Manual

Important: For your own safety you must read this manual in full before attempting to fit the kit to your bike. You must also ensure that you fit the kit in strict accordance with the instructions. If you are unsure of any of the procedures, have the kit fitted by a professional.

Before you start the installation of your kit, please read the following:

This kit is intended to be fitted by someone who is competent and experienced at fitting electric kits to bikes. If you are not experienced and/or lack the necessary skills or tools to complete any of the procedures in this manual, you should seek the advice of a professional who can fit the kit for you.

You will need the following to install this kit:

M33 spanner (supplied with the kit)

Cable-ties

Side-cutters

3mm Allen key (display)

4mm Allen key (mounting bracket bolts)

5mm Allen key (hanger plate bolt)

6mm Allen key (fixing block)

8mm Allen key (crank bolts)

What's in the Box

The kit comprises of the motor itself, left/right cranks, display unit, remote panel, speed sensor (and magnet), and a tool. Ensure that you have all of these items, a picture of the items is show below so you can easily identify each of the parts.

If you have ordered the version of the kit that includes a throttle, you will also have the below:

BEFORE fitting the kit to the bike

Plug everything in on your workbench and power up the kit, this will help to familiarise you with the various parts that make up the kit, and also to ensure it works before fitting it to your bike. Refer to the instructions later in this manual to see which connections go where.

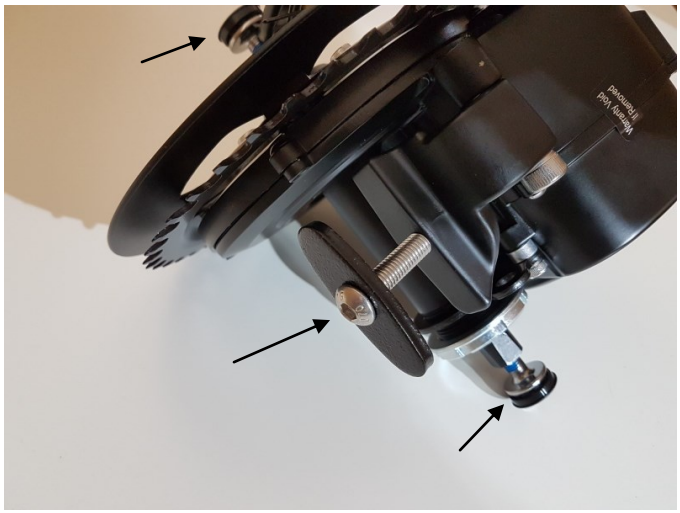
Assuming the display comes on, hold the motor in such a way that the chainring is not touching anything) and slowly engage the thumb-throttle, the motor should engage and the chainring rotate.

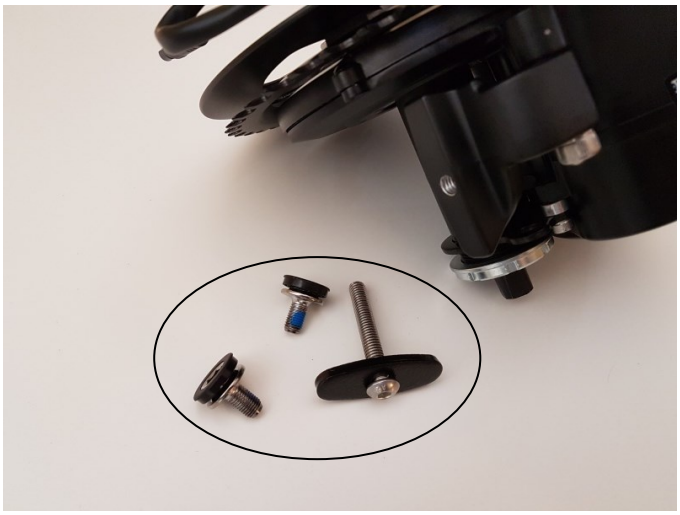
With these tests complete, you can now install the kit on to your bike.

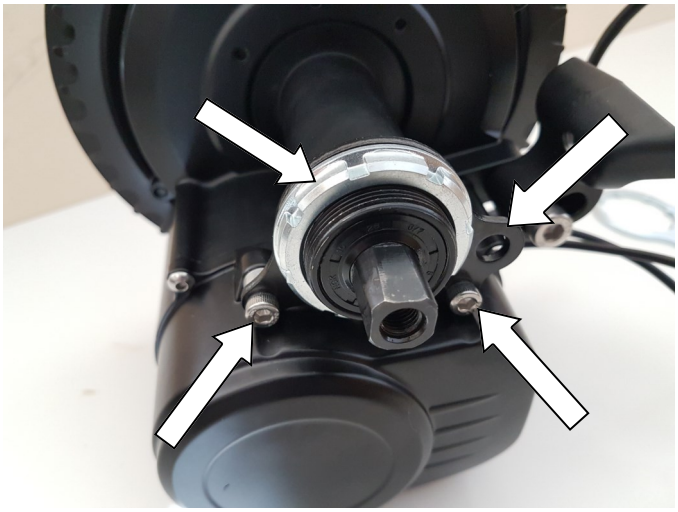
Motor Installation

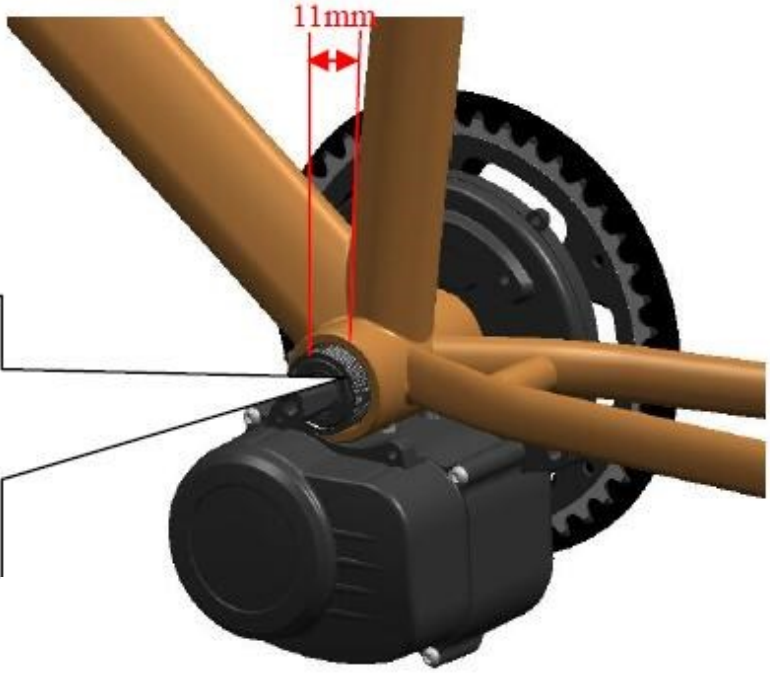
The TZDS-2 mid drive motor is designed to be used with a **68mm – 73mm** bottom bracket shell. Ensure that your bottom bracket is suitable before beginning the installation.

Remove your existing bottom bracket, and then remove the crank bolts, and hanger plate/bolt from the motor see below. Also remove the M33 nut, bolts, spacers and mounting bracket.



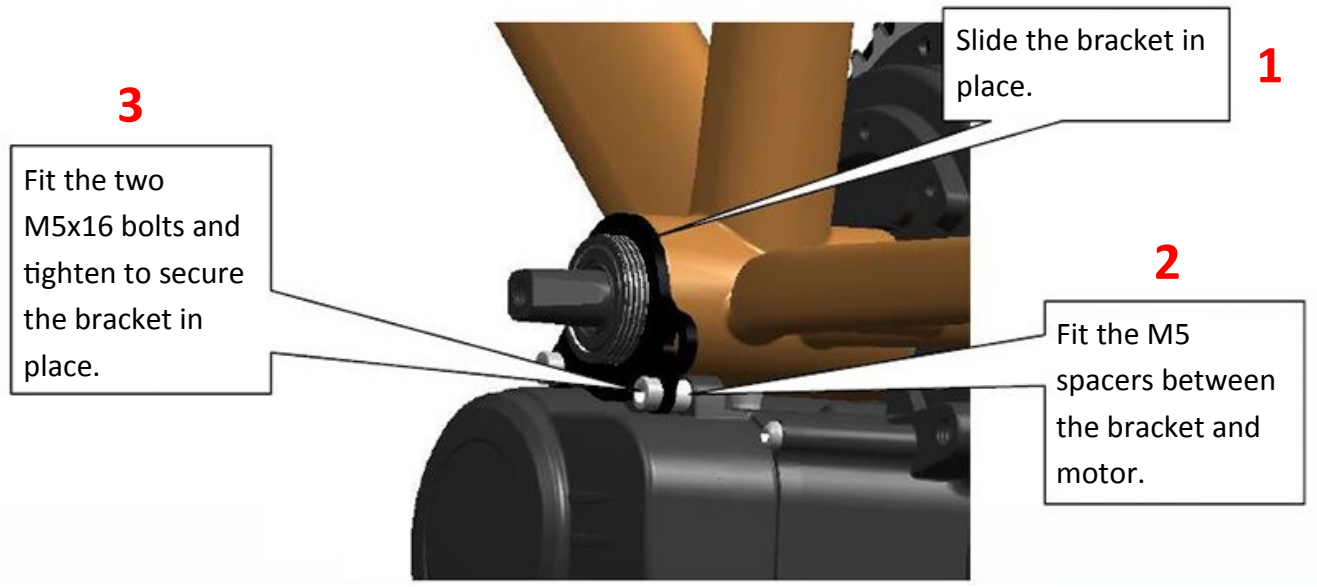






Slide the motor in from the right-side of the bike and through the bottom bracket shell as shown.

Motor Installation cont.

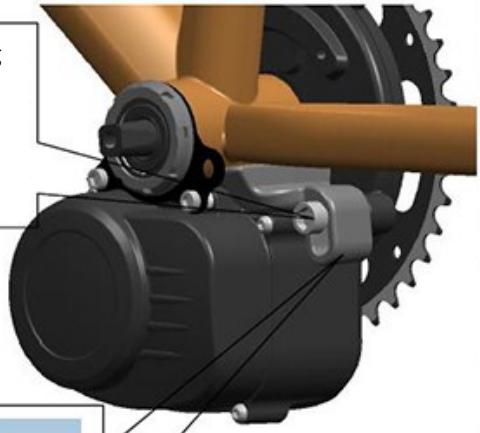


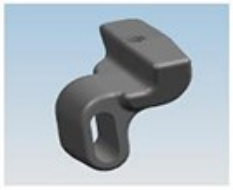
Note: In the case of a 73mm bottom bracket shell, you will need to fit additional washers/spacers between the bracket and motor.

Finger tighten the M33 nut in place, and then using the tool, tighten the nut to approximately 40Nm.

Motor Installation cont.

Install the fixing block using the M8x40 bolt. Do **NOT** tighten it yet.



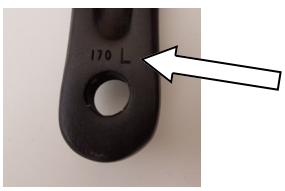


Fixing block

Re-fit the bridge-plate that you removed earlier. Tighten to secure the motor in place.

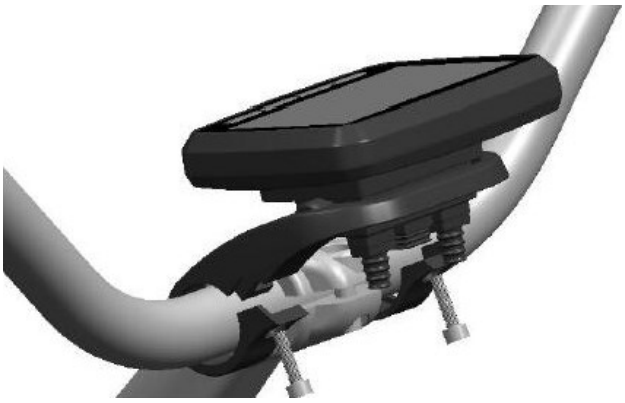
Using a 6mm allen key, tighten the bolt to approx. 10Nm

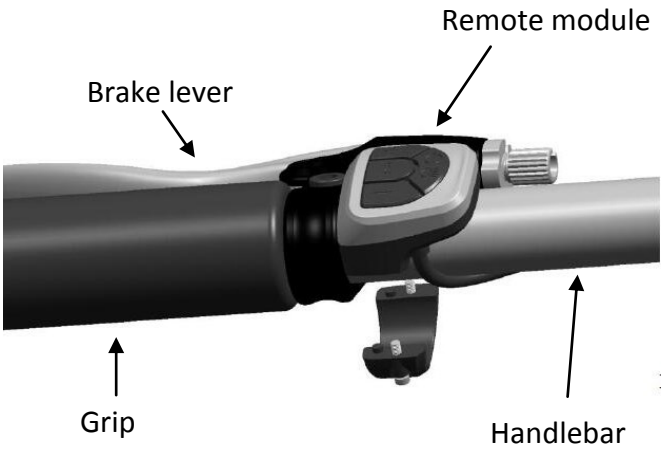
You can now fit the left and right cranks. They are marked with L and R on the rear face. Tighten to 40Nm.



Display Installation

The display should ideally be mounted in the centre of the handlebars. When mounted in the centre, you can fit the optional remote module, this allows you to control the motor more easily by providing controls closer to where your hand would normally be resting.





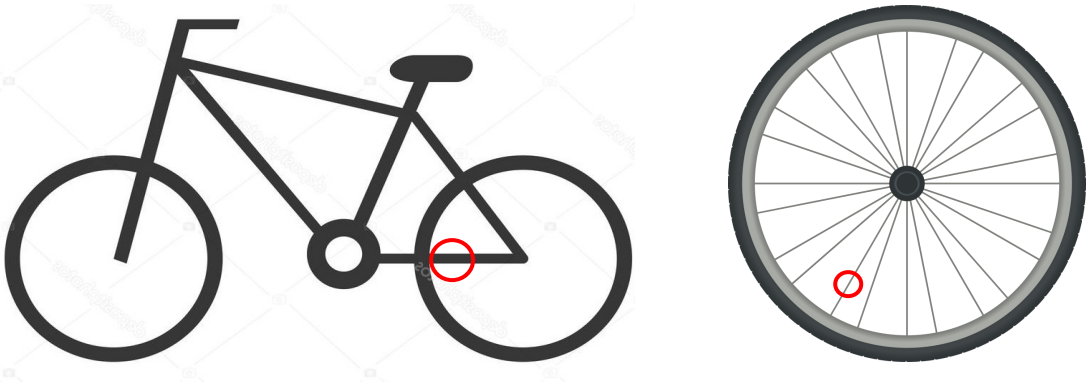
If you have purchased the kit with the brake levers and thumb-throttle, do not fully tighten the display bolts just yet, as you will need to access the underside of the unit, to plug in the brake and throttle inputs.

The remote module attaches as shown above, the thumb-throttle and brake levers attach to the underside of the unit as shown below. The brakes attach to the outer sockets, and the thumb-throttle plugs in to the middle socket.

Only the brakes are attached in the image above. If you are not using the throttle, leave the cover in place. Next, run the cable from the display along the down tube and attach it to the matching cable on the motor.

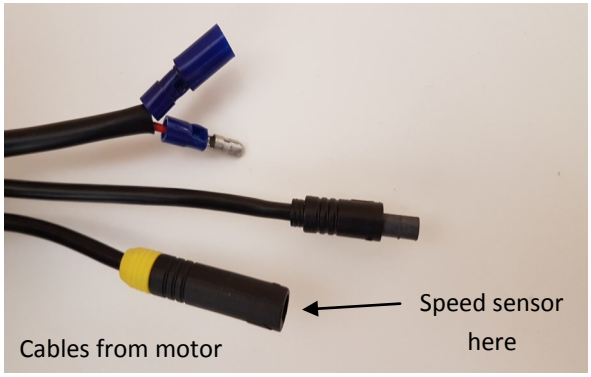
Speed Sensor

The speed sensor should be mounted on the chain stay on the left side of the bike, with the cable exiting from the sensor towards the motor. Attach the magnet to one of the spokes and ensure that it is correctly aligned with the sensor. **There is a small arrow on the sensor indicating the area which the magnet should pass as the wheel rotates.** Adjust the position of the sensor/magnet as necessary, and ensure that the magnet does not hit the sensor. A rough guide to the sensor/magnet position is shown below, indicated in red.



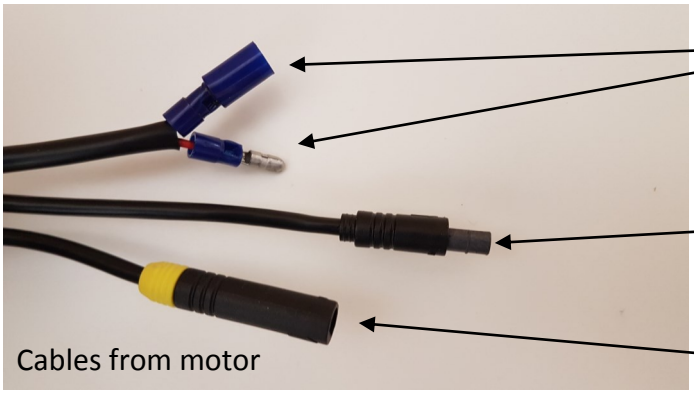
If you find that there is not enough space between the chain stay and the spokes to mount the sensor, the sensor can be removed from the mounting and secured directly to the chain stay with cable-ties. To remove the sensor from the mounting bracket, remove the rubber cover from the rounded part of the sensor, and then use a 3mm Allen key to undo the bolt beneath. See below-right.

The speed sensor cable should be mated with the yellow-marked connector coming from the motor as per below.



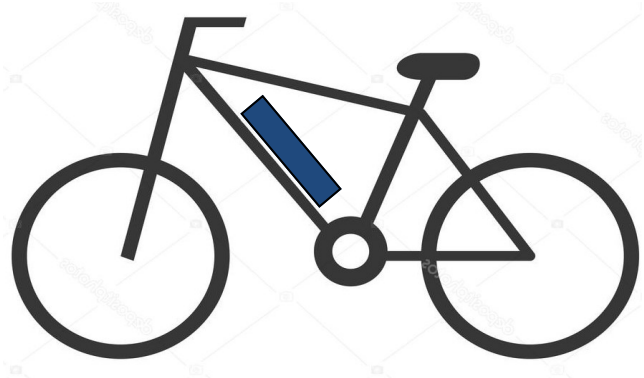
Cabling

The two remaining leads (after connecting the speed sensor) coming from the motor are the power lead to connect to the battery, and the signal lead which is connected to the display.

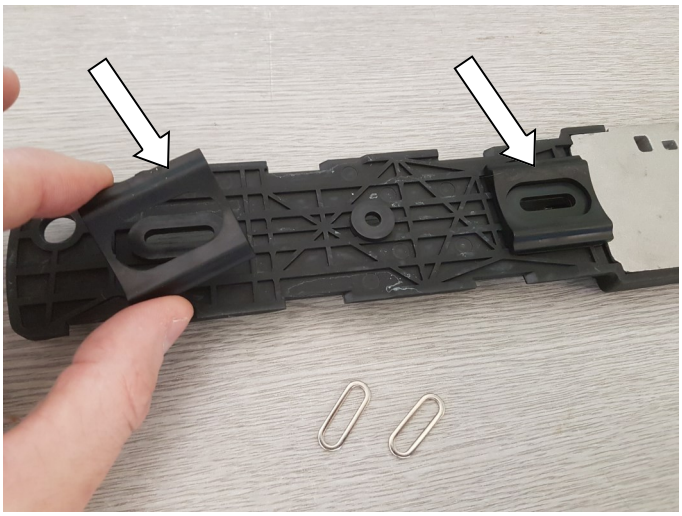


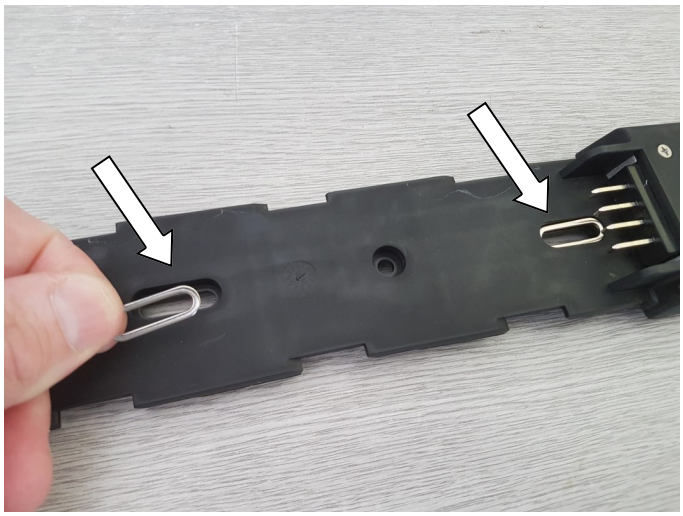
With all of the leads now connected, fit the cranks. A battery can now be connected and the kit can be powered up. If you are using our **HL battery**, please see the following information regarding the installation of the battery cradle, otherwise skip this section and move on to **"Operating the Display"**.

The HL battery is designed to be mounted to the downtube where the water bottle would normally be. It is not uncommon to find that the not all the fixing positions line up with the necessary positions on the battery cradle. If this is the case, you will need to use one or both of the riv-nuts that are provided with the HL battery kit.



Don't forget to fit the washers, and the rubber spacers that go on the underside of the battery cradle. If these washers are not fitted, the plastic will deform and eventually break. The rubber spacers help to keep the battery stable.





HL Battery operation:

The HL batteries come in two slightly different variants.

Battery Type 1

The first battery-type is always on, and when the button is pressed, it just shows current state of the battery—the more lights illuminated, the more full the battery is.

Battery Type 2

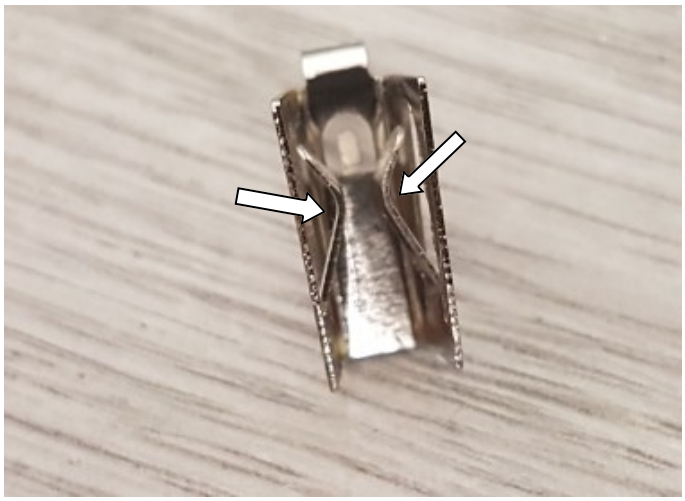
The second type, while physically identical, the button on this one is a multi-function button. The button is used to turn the battery on and off, as well as to indicate the status of the battery.

With the battery off, pressing the button will turn the battery on, this indicated by a single green LED. Pressing and holding this button for a three seconds will turn the battery off.

With the battery already on, briefly pressing the button will show the battery status.

If the battery is left switched on, but unused, it will automatically turn off after a period.

If you find after some months that the display/motor cuts out when riding, it is likely that the contacts on the underside of the battery need some cleaning/adjustment—see below.



Clean out any excess grease, and then use a cocktail stick to flex the contacts inwards a little, a close-up of an individual terminal is shown above-right, and indicates the parts that need to be flexed. It is only necessary to do this to the outer two terminals, as the middle ones are not connected.

Battery care:

Some care is needed to ensure that the battery performs at its best and lasts as long as possible. All batteries age over time, and the way that they age is that the range you can achieve will gradually decrease. Follow the instructions below to ensure your battery performs as well as possible for as long as possible. Charge the battery once or twice per week or more as needed.

Do NOT charge the battery in extremely cold conditions. The battery can be easily removed from the bike and charged whilst off the bike if it's more convenient. Allow the battery to warm up to room temperature before charging.

If the battery is not in regular use i.e. over the winter, you should charge the battery for around 10 minutes every three to four weeks. When the bike is to be put back into service, fully charge the battery as normal. Try and keep the battery around two thirds full when not being used.

General battery care:

Do not attempt to open the outer casing of the battery.

Do not attempt to repair the battery.

Do not immerse the battery in water.

Keep the battery away from children.

Do not drop, pierce or otherwise damage the battery.

Ensure the battery is not exposed to temperatures above 55 degrees Celsius or extreme humidity.

Do not use the bike in an environment where temperatures are below -5 degrees Celsius.

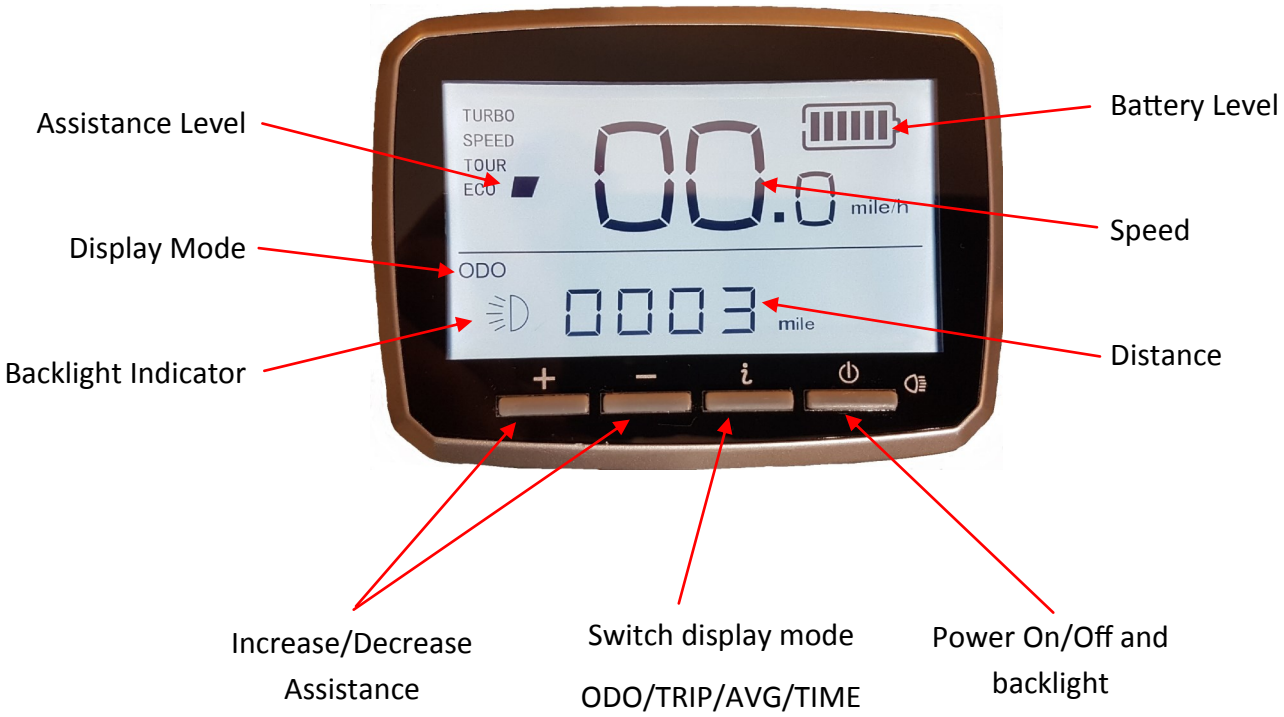
Lithium batteries do not perform at their best during the winter months, and so the range may vary from one season to another.

Charging the battery:

Plug the charger lead into the socket on the right-side of the battery, then plug mains cable into the socket and switch it on. While the battery is charging, the LED on the charger will glow RED, when charging is complete, the LED will go GREEN. If the charger is on but not attached to the battery, the LED will also be GREEN. If you experience a sudden drop in capacity, run the battery down quite low, then fully charge it. Once full, leave the charger switched on and connected to the battery for a further two hours. This will help to balance the cells internally and restore normal operation.

Operating the Display

With the battery installed and the kit installation complete, the kit can now be powered up. Switch on your battery and then follow the below.



To start using the bike, press the POWER button. The display will come on, and the backlight will illuminate briefly, and then go off. The backlight can be switched back on by pressing the POWER button. Press and HOLD the POWER button to turn off the bike/display.

The bike is now ready to be ridden and will provide assistance when pedalling and the thumb-throttle (if fitted) will be active.

When the display is powered up, it defaults to the lowest assistance level. To increase the assistance level, press the + (plus) , and use the — (minus) to decrease the assistance.

There are four levels of assistance, from lowest level to highest, they are ECO, TOUR, SPEED and TURBO.

There is also a **"no assistance"** mode, to access this, press the—(minus) button repeatedly (depending on which mode you're in) until the assistance indicator is no longer visible. This mode allows you to keep logging your speed, distance etc. but there will be no assistance from the motor and the thumb-throttle (if fitted) will not function.

The i button switches the lower part of the display between ODO, TRIP, AVG and TIME. ODO shows the distance travelled, TRIP shows the distance travelled since switching on the display, AVG shows your average speed, and TIME shows the amount of time the display has been on for. **To reset the TRIP computer, press and HOLD the i button.**

Note—Keep BOTH feet on the ground when switching on the display

The unit will not calibrate the torque sensor properly if your foot is resting on one of the pedals when you power on the display. To avoid any issues, either keep both feet on the ground, or switch the display on before getting on the bike. The kit needs around 2 seconds to initialise, after which, the motor is ready to be used.

Setting Wheel Size and Units (miles/km)

You will need to set the wheel size to suit your bike, and you may also wish to change the unit from km to miles, See below for how to do this.

Press and hold the two buttons indicated above for 4 seconds, then press the **i** button 4 times, the display will then enter the setup mode.

The first option is the wheel size, the screen should look like the below, use the plus and minus keys to set the wheel size.

To continue on and change the units from km to miles, after setting the wheel size, press the **i** key twice,. Use the plus and minus keys to change from km to mile or vice versa. After a short period of no input, the display will automatically revert to it's normal operating mode.