



bw electronics EASYDRIVE PLUS Electronics Electrically User Manual

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bw electronics EASYDRIVE PLUS Electronics Electrically



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Introduction

Thank you for choosing the EASYDRIVE. We thank you for your trust and are pleased that you support our company. Our products are developed and manufactured in Germany. If you have any questions or suggestions, please feel free to contact us. You can also visit our website www.bw-electronics.de.

Important notes

Please read this user manual carefully before using the product. The EASYDRIVE is designed to operate safely and reliably as long as it is used in accordance with the user manual. bw electronics GmbH accepts no liability for damage or injury caused by actions that conflict with this user manual. In the following, the EASYDRIVE PLUS is also referred to as EASYDRIVE or ED PLUS. Observe the following instructions to ensure safe operation:

- Use only original accessories or suitable accessories for the EASYDRIVE PLUS.
- Check the condition and function of the EASYDRIVE PLUS before each ride.
- Only allow adults who have received instruction in the operation of the product to handle the ED PLUS.
- Stop the motor immediately if you should fall.
- Do not operate the motor if someone is in the vicinity of the EASYDRIVE.
- Do not give full throttle from a standstill. Start the motor slowly. As soon as the motor is turning, you can give full throttle.
- Do not start the engine unless it is in the water.
- For safety reasons, always wear a helmet and life jacket.
- Always store batteries in suitable and safe containers.

- In addition to these important instructions, observe the entire user manual

Product overview

Scope of delivery

The complete scope of delivery of the EASYDRIVE PLUS includes the following parts: (standard scope of delivery)

- EASYDRIVE Kit for your Wingfoil, SUPfoil, Kitefoil, etc.
- Folding propeller made of aluminum (hub made of PA12)
- Motor mount with individual mast profile
- Waterproof battery box with integrated electronics
- 12,6 Ah battery 8S
- Wireless remote control with induction charging pad
- 240V battery charger
- 3M Dual Lock adhesive mounts for attaching the battery box to the board
- 3M self-adhesive cable guide for attaching the motor cable to the board
- Mast cable guide for attaching the motor cable to the trailing edge of the mast
- Allen screwdriver
- Insulating tape

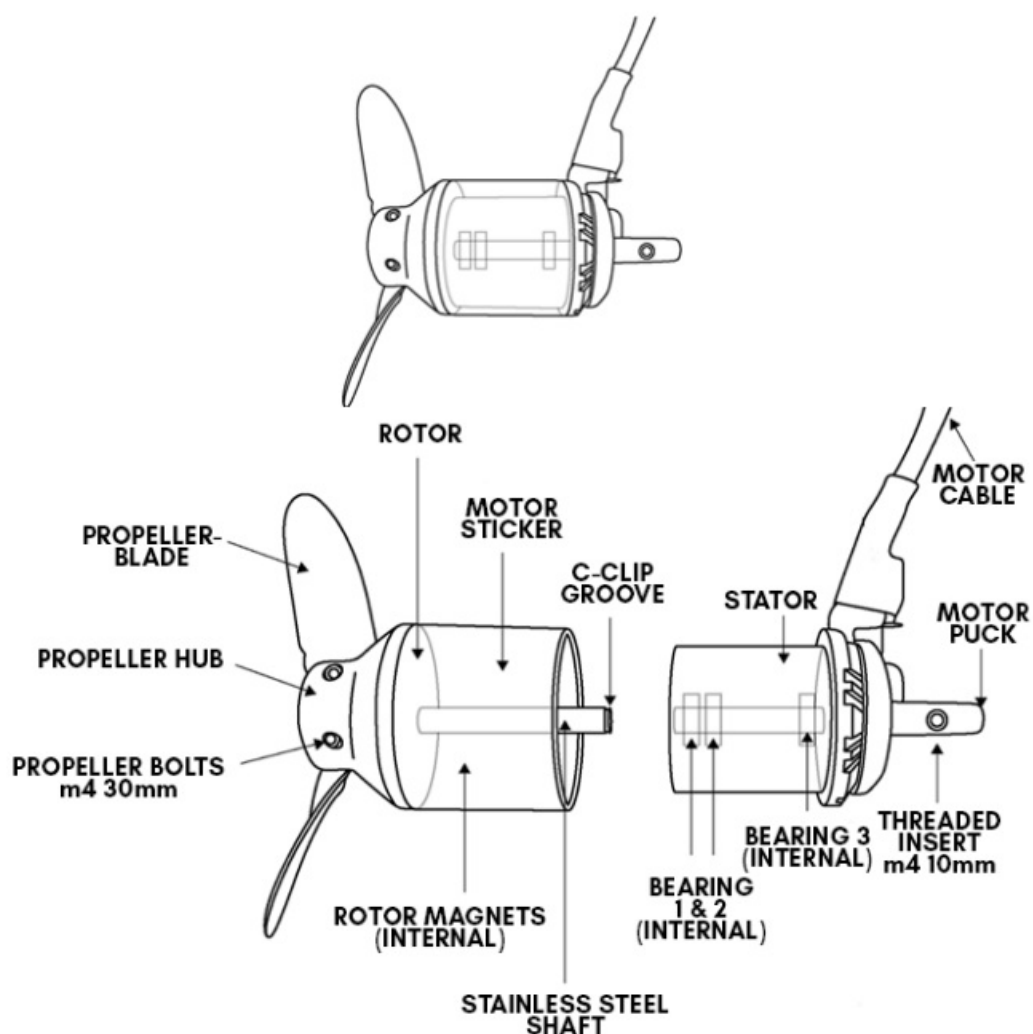


Technical data

EASYDRIVE PLUS

Installation weight	approx. 3,7 kg
Dimensions box	approx. 27 x 11 x 7 cm
Operating voltage	29,6 V
battery	12,6 Ah battery 8S with integrated BMS
Energy battery	362,8 Wh
Maximum continuous output	<2,2 kW
Maximum thrust	Up to 24,5 kg
Runtime	15 minutes – 2 hours
Charging time	approx. 3 hours
Installation time	10 minutes
Propeller material	Aluminium
Operating temperatur	5°C – 50°C

Motor drawing



Assembly and commissioning

Mounting the motor

1. Clean and dry the mast of your foil before mounting the motor. Contamination can damage your equipment.
2. Use the supplied screwdriver to remove the 3 outer screws of the motor mount.
3. Remove the 4 inner screws from the motor mount and separate the two halves.
4. Position the motor bracket at the desired height (We recommend: 20-25 cm from the board for the optimal position where the motor provides the best support and sticks out of the water once foiling)
5. Now carefully screw the 4 inner screws back in and fix with 1/4 turns until the motor mount can no longer be moved by hand.

NOTE: Make sure the motor mount is seated properly and do not over tighten the screws or the threaded inserts will be pulled out of the housing. The screws should be tightened so that the motor mount does not move up and down. Check the screws before each use and make minor adjustments as needed. If the motor mount is too loose, take the enclosed electrical tape and tape it around the pole. Repeat the procedure if necessary.

6. Mount the motor on the back of the motor bracket and make sure it slides in easily without force and that everything is in line. Then carefully tighten the 3 outer screws. (DO NOT over tighten the screws, they only need to be hand tight).



Assembly of the battery box

1. The position of the box should be as flat as possible and in a place where it does not collide with other utensils from the board. It is recommended to place it crosswise to the end of the board. (See picture)
2. Clean and degrease the area, e.g. with isopropanol.



3. When you have found the right position, the self-adhesive dual lock tape is stuck to the bottom of the technique box (clean and degrease beforehand)..
4. Then stick the box to the desired location and attach it by pressing firmly. Apply firm pressure to the box for at least 15 seconds to ensure proper adhesion and leave the box in this position for at least 15 minutes before removing or wetting the box again. After 72 hours, the adhesive has reached full adhesive strength. To remove again, hold the box by the ends and roll it forward or backward. When reattaching the box, press down firmly with a slight wiggle. You will hear an audible click as all the teeth of the strip engage. All strips must be fully engaged for the box to be properly attached to your board.

Mounting the motor cable



It is important to check the tightness of the cable gland before/at each use. If the cable is compressed, the nut may need to be retightened. It should not be possible to push the cable in or out with the correct pressure of the nut. A loose cable gland can cause water to get inside the battery box and damage and corrode the components inside.

1. Run the cable directly to the back of the box and then around the board end to the bottom. The cable must run directly behind the mast to minimize the water resistance of the cable.
2. using the supplied insulating tape, clear tape or similar, attach the cable to the bottom of the board and to the mast.
3. Secure the cable so that it cannot come loose due to the water resistance. Otherwise it can contact with the propeller and damage your EASYDRIVE.

Remote control

1. Power button
2. Throttle trigger
3. cruise control (for advanced users)



Display

1. Connection to the box
2. Battery status remote control
3. Battery status EASYDRIVE PLUS
4. Thrust in percentage
5. Speed Set

Menu

To enter the menu, with the remote on, press and hold the cruise control button and then simply press the power button. Once you are in the menu, you can release the cruise control button. Scroll through the menu options with the small arrow on the left by briefly pressing the power button and long pressing the power button to select. The cruise control button always takes you back one level or to the home screen.

Functions

The remote control has the following functions, which you can find in the menu.

1	1st Speed Set	see 2.4.3.3	
2	2nd Speed Set	see 2.4.3.3	
3	3rd Speed Set	see 2.4.3.3	
4	Batt. Type	For manufacturing purposes only	Standard: 3,7V
5	Batt. Ser Num	For manufacturing purposes only	Standard: 08

6	Pair	see 2.4.3.4	
7	Calibration	see 2.4.3.5	
8	Data Source	For manufacturing purposes only	Standard: VESC
9	Motor Poles	For manufacturing purposes only	Standard: 07
10	Gear Ratio	For manufacturing purposes only	Standard: 1.0
11	VESC Thr.	For manufacturing purposes only	Standard: None

Display

By pressing the power button, you can display various information on the home screen. (Gas in percent, motor rpm, current/voltage, temperature)

Cruise Control

Select your desired speed by holding the throttle trigger. Now also press the cruise control button for 3 seconds. Cruise control is now activated. The speed display in percent now starts to flash. To cancel, press the cruise control button or press the throttle trigger until you exceed the cruise throttle value.

1st / 2nd / 3rd Speed Set

You can limit a maximum speed/throttle position in each of these 3 settings in the remote control. The speed set is displayed at the top center of the remote control with SP1 / SP2 / SP3, see number 5 in chapter 2.4.1. Press the cruise control button for 3 seconds on the home screen to switch between the 3 different speed sets.

Pair

Disconnect the battery plug from the EASY DRIVE. Then enter pairing mode by pressing and holding the power button. The display now shows "Pairing...". Now connect the battery to the ED PLUS by connecting the battery plug. After about half a second, you should return to the main menu. Pairing has been successfully completed. Check whether the motor responds. If pairing cannot be completed automatically, press the power button for 2 seconds to return to the main menu. Switch off the remote control and disconnect the battery from the control box again for 2 minutes and repeat the pairing process.

Calibration

Due to environmental changes during use, you may have to recalibrate the remote control because the throttle display does not start at 0% or does not go up to 100%. If you have called up the menu, you need to finish the calibration, otherwise the remote control will lose the connection to the ED PLUS. Press the throttle trigger all the way down and then release it again. Repeat the process with the cruise control button. The display will now show "Cal. OK" twice. Exit the menu by pressing and holding the power button for 2 seconds.

Commissioning

We recommend trying your unit on flat water first, away from obstacles and others. Get used to the operation of the controller and the thrust, most riders are surprised by the amount of power the system has. Always use a leg rope or waist leash to prevent the board from getting away in the event of a crash. Make sure that your safety leash or other equipment you are using cannot tear the ED PLUS off the board in the event of a fall and potentially damage it. Please note that the EASYDRIVE PLUS is an assistance motor that was developed to provide short-term power assistance. It is not designed for continuous operation (foiling).

First Ride

It is important that the inside of the battery box remains dry. Place your device outside of the water and turn it on. Dry your hands, hair, and wetsuit to avoid dripping water.

1. Check there is no damage to any parts of the system, in particular the motor, propellers, cable, waterproof seals, and controller.
2. If the controller is on it must read 0% or turn it off (fail safe mode) before connecting to the EASY DRIVE.
3. Insert the battery with the EASYDRIVE logo facing up. Plug in the battery.
4. Check the battery is fully charged using the battery monitor on the remote control.
5. Ensure the box seal is clean, dry and free from obstructions before closing, latch shut and check the cable gland is tight.
6. Clear of obstruction, slowly full the throttle trigger to test the connection to the motor.
7. Place the controller into fail safe mode by turning it off before handling the board.

Important Notice Never lift the board out of the water when the remote control is on, and do not operate it when away from the mast or board. DO NOT touch the motor or propeller while the battery is plugged in, the propeller can cause serious injury.

Battery

Always store and transport rechargeable batteries in suitable, fireproof containers, away from flammable objects. If the battery has become wet, do not continue to use it, and do not connect it to the charger. If the battery is submerged or becomes wet, carefully remove the blue heat shrink and carefully try to dry the battery. If it comes into contact with salt water, rinse immediately with fresh water to reduce the likelihood of chemical reactions. The battery is most likely defective and must no longer be used. In the event of contact with less than a teaspoon of water, carefully remove the blue heat shrink and dry the battery in a safe open place. Take pictures and document the condition of the battery and contact support@easydrive.fun if you are not sure. Transporting a damaged, damp or wet battery (especially from salt water) is extremely dangerous and should be avoided at all costs. Every battery in existence has a limited useful life span. Typically you can expect EASYDRIVE batteries to perform well for 1-2 years. Depending on use and stress, number of cycles, storage, care, etc., it is also possible to use the batteries for longer.

Charging the battery

Only charge the battery using the supplied charger or a suitable charger, which is available as an accessory. Never charge the battery in direct sunlight. The optimum ambient temperature is around 25°C. If possible, avoid charging the battery in very cold or warm temperatures. Do not charge the battery immediately after use. The temperature may be elevated and can lead to damage. Only charge batteries under supervision.

Storage of the battery

The best way to leave your battery is at a storage state of 40 – 60% State of Charge (SoC). Storing the battery at the correct voltage ensures that the battery ages as little as possible. Batteries should always be charged in a cool, dry place and not fully charged. Not even if it is only over one night, the nights add up and lead in total to a damage of the battery. The battery can be stored at approx. 32.0V for a short time. For longer storage, from about two days, a voltage of approx. 29.0V (30-50%) is recommended. Store only undamaged batteries and check the batteries regularly for voltage (weekly/monthly). Store rechargeable batteries in a safe place and in suitable containers. The energy that escapes from a rechargeable battery in the event of a fault is not insignificant. The less energy there is in the battery, the less energy has to be dissipated in the event of a short circuit. The batteries have an integrated Battery Management System (BMS) that constantly balances the differences in the cells. This can cause the battery to discharge faster or slower. It is therefore important to check the voltage regularly to avoid damaging the batteries.

Disposal of batteries

Discharge old and worn-out batteries well below the storage voltage of 29.0V. Take the discharged battery to a dealer near you, to the dealer you trust or to a battery collection point, e.g. a recycling center. Never send defective rechargeable batteries.

Flight battery bundle

The flight battery pack is designed to make traveling with the EASYDRIVE PLUS easier. The Flight Battery Pack consists of two individual small 4.2 Ah batteries, which are connected to each other with a Y-cable. Each of the two battery packs has 120.9 Wh, a total of 241.8 Wh. This means that the battery pack has 2/3 of the capacity of a standard EASYDRIVE battery pack. Charge both flight batteries fully, as different charging states could damage the batteries during use. The Flight Battery Bundle must not be used for e-Foiling. It is only designed for short bursts of a few seconds to get out of the water. The longer you use the batteries, the warmer the cells become and the faster they age. This will cause lasting damage to the battery. Continuous use can lead to overheating and even fire. As the regulations vary from airline to airline and can change, it is essential to contact your airline before each journey and clarify the details of the transportation conditions.

Care and maintenance

Check the EASYDRIVE regularly for damage or cracks. If you discover any damage, have it repaired by a specialist dealer. Remove sand, dirt, and salt water immediately. Dry all parts before stowing it away for storage. Store the EASYDRIVE in a clean and dry environment and avoid direct sunlight. Be sure to disconnect the battery from the motor before storage. Observe the storage instructions for the rechargeable battery under 3.2.

Saltwater and Sand

Saltwater is the most brutal operating environment for electronics and can take its toll if not well managed. The custom motor has an epoxy coating to completely seal the motor's exposure points. We have coated the magnets to resist water ingress and use 100% ceramic ball bearings. This will ensure critical spinning components won't rust and should run for a long time when properly cared for. Keep all components out of the sand and never flip your board upside down with the electronics box open. Sand in spinning motors and bearings causes excessive wear and damage to waterproof coatings. If you do get things dirty, carefully wash or wipe them with warm, fresh water will help dissolve any built-up salt.

After Use Instruction

While the EASYDRIVE motor is super hardy and very robust, it remains susceptible the harsh marine environment. Just like any other marine device or toy, the motor requires regular care and maintenance to remain in top condition. Some simple steps after every use can ensure the motors will last you a long time and be super reliable. You must observe the following instructions.

Important Note: When placing the motor can/rotor back on the stator, you **MUST** use two hands to slowly guide it back on. Once the magnets grab, you must ensure the rotor doesn't slam against the stator otherwise you risk damaging your bearings.

Fresh Water Rinse

It is most important to remove and rinse the Rotor (Motor Can) from the Stator as soon as you can. If you don't have access to a hose or running water, a drink bottle with fresh water is a great start. If you are riding in fresh water, it is still important to rinse your system as minerals and debris can also cause issues long term.

Dry and Lubricate

Always dry your EASYDRIVE parts and store your system with the Rotor Removed from the Stator. Salt water in particular is extremely aggressive, even a small residue can begin the oxidation process and if not spotted early, can cause your motor to seize. Once dry, we recommend lightly lubricating the rotor and stator with a Rust Preventor or similar. Check the power cable for damage, the watertight cable gland, and the housing seal. Make sure that the battery, the inside of the housing and the power connection are dry and free of sand. Store the device with the lid open in a dry environment


Remote Controller

You must also rinse your remote Controller in fresh water. Submerge and (with the controller off) pull each trigger in to thoroughly rinse. When done, ensure you shake as much water from the internals as possible to assist in drying.

General information

Stop usage as soon as any vibration is felt through the motor. Even low throttle with vibration can cause damage. The most likely thing to cause failure is sand and debris damaging or interfering with the lid seal of the box or waterproof gland. It is imperative that these items remain in perfect working order to protect the electronics inside the box. Use a clean, lightly damp cloth (freshwater) to wipe the box lid seal. Ensure the grommet in the cable gland is properly seated, not damaged and is tight. The cable gland will need tightening periodically. Saltwater is extremely corrosive and the battery terminal plugs are susceptible to corrosion. These plugs must be kept clean and dry at all times. DO NOT attempt to clean the battery terminals! Short circuit will destroy your battery and can be dangerous! Contact EASYDRIVE if you feel there is corrosion beginning to form on your battery terminals and avoid use until further notice. Much like any equipment exposed to salt, maintenance and due care is required. Replace defective parts immediately. Check the battery box regularly for leaks. Do not store the EASYDRIVE in direct sunlight, not even for a short time. Have an engine service performed by your specialist dealer after every season or after 50 operating hours at the latest.

Documents / Resources

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