

DC-DC Converter 96V-12V 500W User Manual



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1 THANK YOU

Thank you for purchasing a product from ePropulsion, world leaders in cleaner, safer and more reliable electric marine propulsion systems. We are sure you'll be pleased with your new motor and welcome your feedback at www.epropulsion.com.

2 Product Introduction

2.1 Product Description

This product is an isolated DC-DC converter with advanced high-frequency conversion technology. It is designed to convert the voltage from high voltage batteries to a 12V voltage, supplying power to 12V device. It features a compact size, high efficiency, and stable output. The DC-DC converter provides complete electrical isolation between input and output for safety. The output voltage can directly charge a 12V battery or power 12V electrical devices. This product operates in a non-communication mode, providing power to the 12V system upon connection to the high voltage battery.

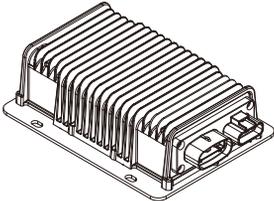
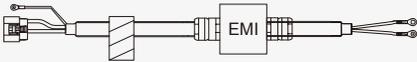
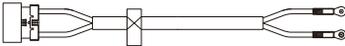
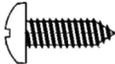
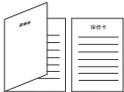
2.2 Specifications

Rated Input Voltage	75 - 120 Vdc
Rated Output Voltage	13.8 Vdc
Maximum Output Power	500 W
Storage Temperature	-30~+70 °C
Operating Temperature	-20~+60 °C
Net Weight	1200g
Dimensions	204*154*64 mm
Protection Level	IP67

2.3 Protection Functions

Protection Function	Description
Input Under-voltage Protection	In the case of the high voltage battery voltage dropping below a critical level, the output will be automatically suspended to prevent over-discharge.
Output Short-circuit Protection	In the case of a short circuit in the 12V system, the protection mechanism enters a hiccup mode, temporarily interrupting the output. Once the short circuit is resolved, the voltage is automatically restored, ensuring the safety of the boat's cables.
Output Current Limit Protection	When the load on the 12V output exceeds a safe threshold, the converter automatically limits the output current, preventing it from further increase. This feature ensures the safety of the boat's cables by avoiding over-current.
Output Over-temperature Protection	In the case of the 12V output load overheating, the converter automatically attenuates the output power. Rather than an immediate shutdown, this gradual reduction in power ensures the continuity of power supply to the boat's 12V power system, maintaining uninterrupted electrical support.

3 In the Package

Item	Qty.	Figure
DC-DC Converter	1	
Input Connection Cable 0.8m	1	
Output Connection Cable 1.5m	1	
Self-tapping Screws	4	
Self-tapping Screws	2	
Washers	4	
User Manual	1	

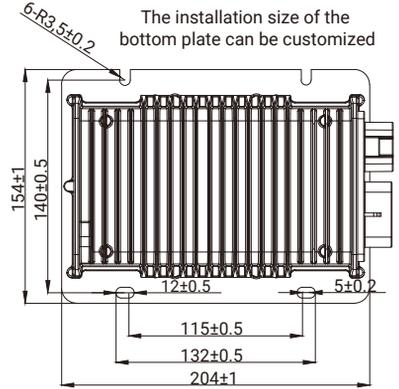
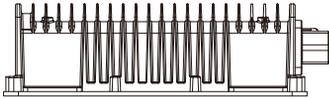
When opening the packages, please check contents against the list above. If anything is missing or damaged, please contact your dealer.

4 Connections and Installation Diagram

4.1 Dimensions

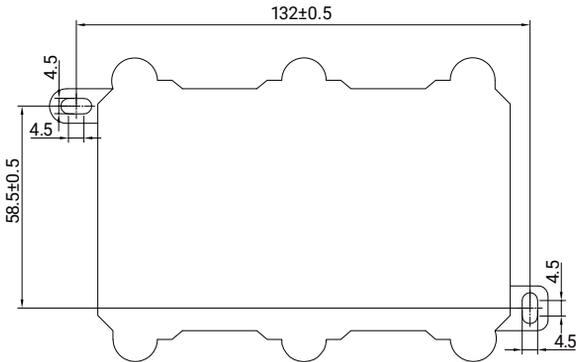
(1) DC-DC Converter

Unit: mm

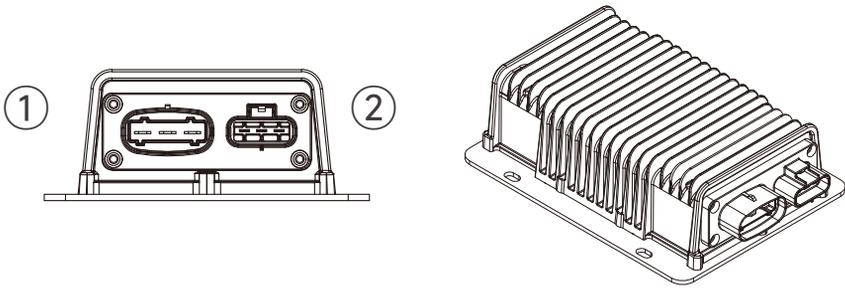


(2) EMI box of input connection cable

Unit: mm



4.2 Interface



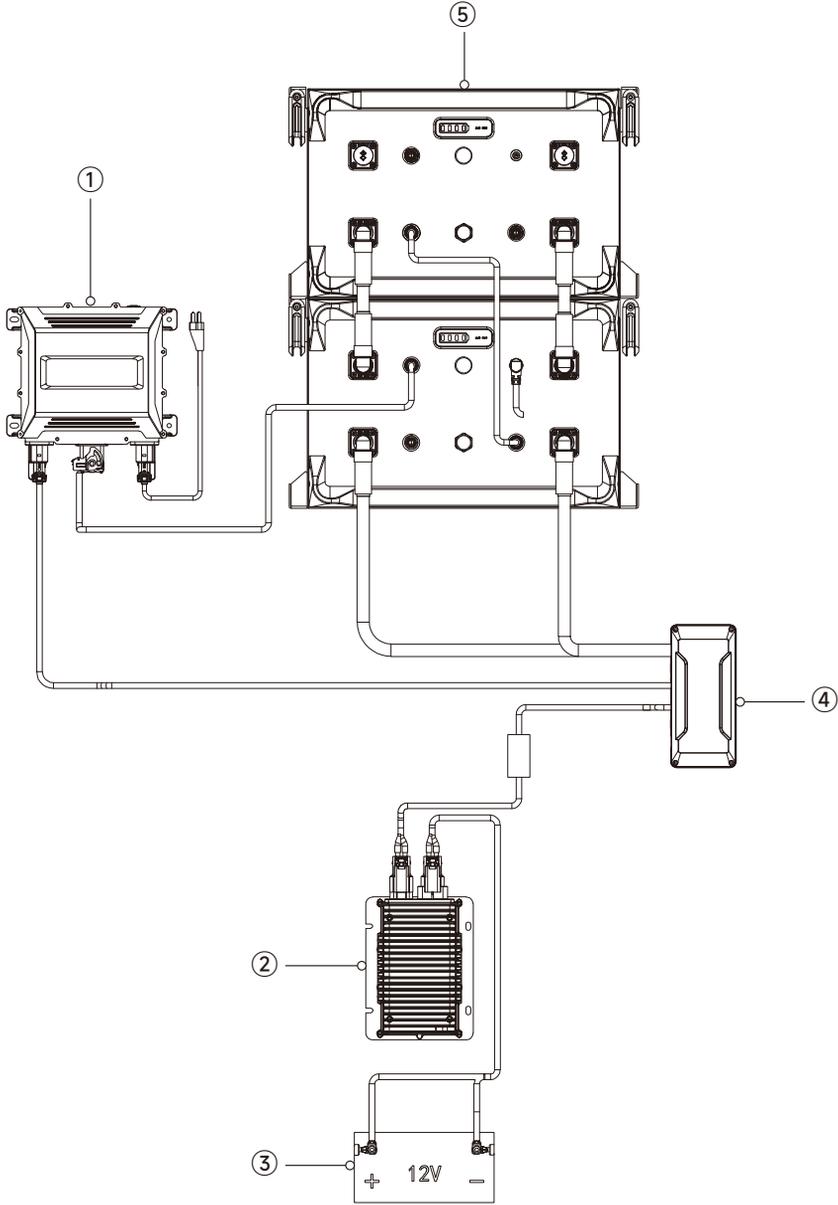
① 12V power system output interface, connected to the 12V battery and 12V devices.

② Battery input interface, connected to the high voltage battery.



The terminals of the input and output cables in the interface are red for positive and black for negative.

4.3 Connection



① Battery charger

② DC-DC converter

③ 12V battery

④ Battery output bus box

⑤ High voltage battery

5 Notices

1. This product does not support hot-swapping with electrical power. Please mount and connect with the high voltage battery turned off.
2. The DC-DC converter 96V-12V 500W has a maximum output power of 500W. Please ensure compatibility with an appropriate capacity lead-acid battery.
3. Use the DC-DC converter 96V-12V 500W in a dry, clean environment to ensure the stability and safety of the equipment.
4. Before each use, inspect the appearance and power connections of the DC-DC converter 96V-12V 500W. Ensure that the cable connections are stable and reliable. In case of any damage or abnormality, stop using it immediately and contact maintenance personnel.
5. Opening the charger casing without the manufacturer's prior written consent will void the warranty immediately.

6 Limited Warranty

Disclaimers

All information and specifications contained in this manual are based on the latest information available at the time of publishing. The actual product may differ. Moreover, because of our continuous product improvement policy, we may modify information and/or specifications to explain and/or exemplify a product, service or maintenance improvement without reducing the performance or quality of products that already been purchased. We reserve the right to make any changes at any time without notice.

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6.1 Introduction

Congratulations on the purchase of your new ePropulsion Product! We are happy to welcome you to the ePropulsion family! ePropulsion has been deeply involved in the field of marine new energy power for more than ten years, focusing on the research and development, manufacturing and sales of marine electric/hybrid propulsion systems and core components, and has full-chain system integration service capabilities and rich engineering design experience. The main business covers propulsion equipment with a power of 500 watts to 1000 kilowatts, supporting controllers, batteries, main motor remote control systems, energy management systems and smart ship solutions. It is committed to promote the upgrade of marine power systems to new energy and is an industry-leading leader worldwide in marine electric propulsion technology. ePropulsion wants you to enjoy your new ePropulsion product for many years to come and asks you to read and understand the manual before you operate the propulsion to ensure that you follow safe operating practices and maintenance procedures.

This manual should be considered a permanent part of the ePropulsion product and shall remain with it. For correct maintenance, repair and genuine parts, visit an ePropulsion authorized distributor/dealer. Your ePropulsion authorized distributor/dealer is always up to date regarding the latest news and technology and is able to answer all your questions concerning your ePropulsion product. You can locate your nearest ePropulsion authorized distributor/dealer by visiting the website of ePropulsion <https://www.epropulsion.com/contact/find-a-dealer>.

Before installing or using your ePropulsion product, please read and understand this manual and the applicable Operation Manual carefully. If you did not receive an Operation Manual, please download a copy from <https://www.epropulsion.com/service/download-center>.

6.2 Limited Warranty

6.2.1 Overview

Guangdong ePropulsion Technology Limited, Room 801, Building 1; 11 Daxue Road, Songshan Lake; CN Dongguan Guangdong Province ("ePropulsion"), provides this Limited Warranty manual to help you take full advantage of your electric propulsion product and its intelligent integrated system product for boats produced by ePropulsion ("ePropulsion Product").

ePropulsion warrants that at the time of shipping, new ePropulsion Products sold by ePropulsion and/or its authorized distributors/dealers will be free from defects in material and workmanship during the limited warranty period specified in Section 6.2.4. A defect exists if the actual condition of the ePropulsion Product differs from the agreed condition or the published specifications.

This Limited Warranty is applicable in all countries and can be enforced in any country or region where ePropulsion or its authorized distributors/dealers provide ePropulsion Products subject to the terms and conditions set forth in this Limited Warranty. This Limited Warranty is subject to all applicable national export and import laws and regulations.

This Limited Warranty is subject to limitations referred to in Section 6.2.3 and 6.2.8.

ePropulsion warrants to the first purchaser who buys the ePropulsion Product to use it ("First Purchaser") that it will make the repairs or replacements necessary to correct defects for the limited warranty period specified in Section 6.2.4. If the ePropulsion Product is transferred to another purchaser during the limited warranty period, it is suggested that the second purchaser notify ePropulsion in text form (e.g. email to service@epropulsion.com) at the time the second purchaser takes possession of the ePropulsion Product.

Unless expressly stated otherwise in this Limited Warranty, all provisions herein apply exclusively to consumers using ePropulsion Products for recreational use unless otherwise stipulated in Section 6.2.4 (1) and 6.2.5. ePropulsion Products used for commercial or professional purposes (with the exception of light commercial use as defined in Section 6.2.4(2)) are not covered by this Limited Warranty; instead, the statutory warranty in your jurisdiction applies. We recommend consulting an ePropulsion authorized distributor/dealer to clarify the applicable warranty coverage before using the ePropulsion Product for such purposes.

This Limited Warranty does not affect any mandatory statutory rights you may have under the

laws of the country in which you have your habitual residence, including any rights or claims you may have under your purchase contract with the ePropulsion authorized distributor/dealer from whom you purchased the ePropulsion Product. The assertion of these statutory rights in the event of defects is free of charge and is not restricted by this Limited Warranty.

6.2.2 Product Registration

ePropulsion Products are Single Products, eSSA System Products and their accessories, as listed in the table below. This limited warranty period applies to all ePropulsion Products and their accessories.

Product Type	Specific Product Series
Single Products	eLite series, Spirit series, Navy series, Pod drive series, E batteries series, accessories
eSSA System Products	X series, P eSSA series, I series, G batteries series

In order to obtain your ePropulsion Product Limited Warranty and to receive quick support for service, parts and technical documentation, ePropulsion strongly recommends that you submit an online product registration via <https://www.epropulsion.com/service/product-registration> within (30) days after you have purchased the ePropulsion Product. The following information is required to register the ePropulsion Product:

- Product Model:
- Product Serial Number (SN):
- Purchase Date:
- Owner Information (Name, Address, Email/Phone):
- Boat Information (Model, Boat Type, Application, Propulsion Type):
- Dealer Information (Dealer Name, Contact Person, Email/Phone)

The benefits of registering your ePropulsion Product include:

- It confirms that you are the legal owner.
- warranty claims can be processed more quickly.
- if necessary, the ePropulsion Service Network can communicate directly with you.
- you have the option to sign up for ePropulsion latest news, keeping you up to date on new ePropulsion Products and features.
- other benefits that are published on the ePropulsion website, including but not limited to warranty extensions (please refer to the ePropulsion website for specific information).

Personal data shall be collected, processed and used by ePropulsion exclusively for the purpose of performing and managing this Warranty Policy, including but not limited to verifying your eligibility for warranty coverage, processing warranty claims (e.g., repair, replacement or

maintenance requests for the warranted product), communicating warranty-related information (such as notifications of warranty status, product safety updates or progress of warranty service), and fulfilling other obligations under this Limited Warranty. For detailed information on ePropulsion's personal data protection please refer to ePropulsion's Privacy Policy at <https://www.epropulsion.com/privacy-policy/>.

6.2.3 Important Limitations

This Limited Warranty applies only to ePropulsion Products manufactured by ePropulsion and sold by ePropulsion or its authorized distributors/dealers. It only applies if the ePropulsion Product is installed and commissioned in accordance with the respective ePropulsion Product installation and operation guidelines contained in the user manual and used and maintained in accordance with the respective ePropulsion user manual. **For eSSA System Products, installation and commissioning must be performed by an ePropulsion authorized distributor/dealer.**

If a defect arises within the limited warranty period, ePropulsion may, at its discretion, choose to repair or replace the ePropulsion Product or part. ePropulsion will undertake the repair or replacement without charge for parts or repair labour. Repair labour includes the cost of labour to remove and reinstall the ePropulsion Product and, if necessary to complete the warranty service, to replace the non-ePropulsion Product components of the vessel in which the ePropulsion Product is installed.

Please note that ePropulsion Products are sophisticated and complex machinery that may be affected by many variables associated with their application. As such repairs may require multiple attempts and may take significant time (up to three (3) months) from the date on which ePropulsion or its authorized distributor/dealer confirms receipt of the defective ePropulsion Product. The repairing time shall delete the duration of waiting time includes waiting time because of customer's delay, statutory/public holidays and force majeure.

After the limited warranty period has expired, you can still enjoy maintenance services from ePropulsion authorized distributors/dealers. In this case, service and accessories fees apply. These fees are based on the rates quoted by the ePropulsion authorized distributor/dealer.

6.2.4 Warranty Periods

The limited warranty period begins on the date of receipt of the ePropulsion Product by the First Purchaser. For the **eSSA System Products**, the limited warranty period **begins on the date of commissioning** the ePropulsion Product approved by ePropulsion.

The warranty periods for ePropulsion Products vary significantly based on the nature of their use, namely commercial use and non-commercial use (which encompasses recreational use and light commercial use).

(1) Warranty Periods for Recreational Use

"Recreational use" means the use of the ePropulsion Product for personal leisure, entertainment, or hobby-related activities, without any intent to generate income or profit. This use is limited to the user, their family, or a small group of non-paying friends. For example:

1. using an ePropulsion-equipped boat for a weekend fishing trip with family members, provided that no one is engaged in fishing for commercial sale;
 2. participating as a hobbyist in a local, non-competitive boating event, using an ePropulsion Product to power the boat.
- **Single Products:** Twenty-four (24) months or 1000 hours (whichever comes first) from the date of receipt of the ePropulsion Product by the First Purchaser, or the limited warranty period you obtained when you registered your ePropulsion Product, whichever is longer.
 - **eSSA Products:** Twenty-four (24) months or 1000 hours (whichever comes first) from the date of sea-trial delivery and commissioning. The limited warranty period shall not exceed twenty-six (26) months or 1015 hours (whichever comes first) from the date the First Purchaser receives the ePropulsion eSSA System Product.

(2) Warranty Periods for Light Commercial Use

"Light commercial use" means the use of the ePropulsion Product in activities that are non-profit driven, public welfare oriented, or to support of community-focused initiatives. Such use is usually carried out by non-commercial organizations and may serve public interest, educational or research purposes.

- **Single Products:** Twenty-four (24) months or 1000 hours (whichever comes first) from the date of receipt of the ePropulsion Product by the First Purchaser, or the limited warranty period you obtained when you registered your ePropulsion Product, whichever is longer.
- **eSSA Products:** Twenty-four (24) months or 1000 hours (whichever comes first) from the date of sea-trial delivery and commissioning. The limited warranty period shall not exceed twenty-six (26) months or 1015 hours (whichever comes first) from the date the First Purchaser receives the ePropulsion eSSA System Product.

(3) Warranty Periods for Commercial Use

"Commercial use" means any utilization of the ePropulsion Product in activities primarily intended for generating income or profit or otherwise carried out in support of a business operation. For example:

1. using ePropulsion Product in a commercial fishing enterprise where the catch is sold for profit;
2. incorporating ePropulsion Products into a tour-guiding business that offers paid boating tours.
 - **Single Products:** Twelve (12) months or 1000 hours (whichever comes first) from the date of receipt of the ePropulsion Product by the First Purchaser, or the limited warranty period you obtained when you registered your ePropulsion Product, whichever is longer.
 - **eSSA Products:** Twelve (12) months or 1000 hours (whichever comes first) from the date of sea-trial delivery and commissioning. The limited warranty period shall not exceed fourteen (14) months or 1015 hours (whichever comes first) from the date that the First Purchaser receives the ePropulsion eSSA System Product.

Any ePropulsion Product or part repaired or replaced under the Limited Warranty assumes the remaining limited warranty period or ninety (90) days, whichever is longer. If only parts are replaced under warranty, the 90 days warranty covers the replaced parts only, the ePropulsion Product itself will remain the original warranty period). Any original part of an ePropulsion Product (except for consumable parts) purchased separately by the customer is covered by a limited warranty period of ninety (90) days.

If the ePropulsion Product is transferred to another purchaser during the limited warranty period, the remaining limited warranty period is transferred to that purchaser. The transfer of this Limited Warranty will not extend its duration. Warranty coverage that has not yet expired cannot be transferred to or from a customer using the product for commercial purposes.

6.2.5 Non-commercial Use

The Limited Warranty applies only to ePropulsion Products purchased by consumers and used solely for recreational purposes and not for any commercial application.

Insofar as the ePropulsion Product is used by consumers for light commercial use, the limited warranty shall apply mutatis mutandis, whereby the limited warranty periods in Section 6.2.4 (2) in this manual shall apply for possible warranty coverage.

6.2.6 Commercial Use

In case of commercial use as defined in Section 6.2.4(3), any commercial contract (including but not limited to the Product Sales Contract or the Purchase Agreement) entered into between the commercial customer and ePropulsion or its authorized distributor/dealer, the warranty terms in the commercial contract shall prevail over this Limited Warranty, if the commercial contract stipulates warranty terms. For all warranty matters beyond the scope of the commercial contract, the provisions of this Limited Warranty shall apply.

6.2.7 Warranty Procedures

If you believe your ePropulsion Product is defective, you must contact an ePropulsion authorized distributor/dealer within fifteen (15) days after discovering the defect. Your authorized distributor/dealer will provide you with the contact details (name, address and telephone number) of the designated service facility.

You are responsible for transporting your ePropulsion Product to and from the designated service facility. Any delivery or transportation costs incurred in the process shall be borne by you, except where such costs arise in connection with the assertion of your statutory rights under the applicable sales contract. In certain cases, your ePropulsion authorized distributor/dealer may, at ePropulsion's sole discretion and subject to prior agreement, arrange for the inspection and/or repair to be performed on-site.

The following procedures must be followed to make a warranty claim:

1. Contact your nearest ePropulsion or ePropulsion authorized distributor/dealer. They will inform you whether the defect is covered by this Limited Warranty or their own warranty and provide the contact details (name, address and telephone number) of the designated service facility.
2. Provide proof of first purchase (e.g., receipt or invoice showing ePropulsion Product, date and the serial number) or commissioning (e.g. the form that shows the commissioning date). Product labels must be kept intact. Claims are valid only if the information provided is correct, genuine, and complete. If you have registered the ePropulsion Product on the official website, proof of first purchase or commissioning is not necessary.
3. Use the original box and packaging material of the ePropulsion Product for transport or equivalent packaging and packaging material for sending the ePropulsion Product to the designated service facility. Pack the ePropulsion Product in such a way that any damage caused by improper packaging during transport is avoided (e.g. by using sufficient padding). ePropulsion is not liable for any damage caused by improper packaging during transport. In certain cases, instead of shipping the products back, on-site service will be managed.
4. Keep defective items available for inspection by ePropulsion or an ePropulsion authorized distributor/dealer for the duration of the inspection. You can request the return of the ePropulsion Product. ePropulsion will arrange the return. If ePropulsion replaces the

ePropulsion Product or part of the ePropulsion Product, the replacement becomes your property and the ePropulsion Product or the part of the ePropulsion Product that is replaced, becomes the property of ePropulsion.

5. ePropulsion or the ePropulsion authorized distributor/dealer will conduct diagnosis and examination on the defective ePropulsion Product to verify the validity of the warranty claim:
- If your warranty claim is accepted, the ePropulsion Product or its defective parts will be repaired or replaced free of charge.
 - If your warranty claim is rejected, you will receive an estimate for repair/replacement of the ePropulsion Product, including the costs of round-trip delivery. ePropulsion or the ePropulsion authorized distributor/dealer will only begin the work after receiving your written confirmation.

Any action arising hereunder must be commenced within one (1) year after the cause of action accrues, unless you are a consumer, in which case a statutory limitation period of two (2) years applies. Any actions commenced after this period shall be barred.

6.2.8 Excluded from the Limited Warranty

In addition to the other conditions and limitations set forth in Section 6.2.3, the following items are specifically excluded from any coverage under this Limited Warranty:

1. Ordinary wear and tear (e.g. aging of sealing rings, fading of external appearance, reduction in display screen brightness, battery capacity attenuation, decrease in cruising range; loose interfaces that still enable normal connection).
2. consumable parts (e.g. propeller, anode).

This Limited Warranty does not cover any defect, damage, cost, or consequence resulting from:

1. Use not in accordance with the Operation Manual or intended use described therein. This includes:
 - Wilful abuse, misuse, negligence or accidents,
 - physical damage (including overcharging or over discharging),
 - installation, handling, operation, or maintenance inconsistent with the instructions in the Operation Manual,
 - failure to perform the required maintenance,
 - delay of more than two (2) months in claiming the repair of the ePropulsion Product despite being aware of the defect,
 - racing or engaging in a contest of speed or endurance,
 - use of non-approved attachments, non-genuine parts, or spare parts of non-equivalent quality,
 - incorrect software settings or unauthorized modifications to software,
 - incorrect storage, e.g. long storage resulting in battery failure, dried/cracked rubber components, or corrosion of electrical contacts/connectors,
 - not performing and paying for regular maintenance and failing to maintain records of all service and maintenance,
 - running aground, incorrect propeller matching, or similar operation against the Operation Manual,
2. unauthorized modification, repair or tampering of
 - the ePropulsion Product, accessory, or part (including removal or alteration of the ePropulsion Product label or the serial number),
 - the power, control, or electrical system,
 - service performed by a non-authorized facility,
3. environmental exposure, e.g.
 - rust or corrosion in electrical contacts or connectors,
 - submersion or exposure to unsuitable environmental conditions, such as high humidity, heavy rainfall, seawater intrusion, or freezing of the cooling water,

4. parts and repair costs of failure due to misdiagnosis,
5. damage due to improper packing during transport,
6. repairs outside normal working hours,
7. service-related costs such as installation, disassembly, financing, rental, or similar costs,
8. non-compliance with applicable laws and regulations governing the transport or packaging of lithium batteries (classified as a UN9 hazardous items), and
9. for commercial customers (B2B) only, transporting the ePropulsion Product, part, or vessel in which the ePropulsion Product is installed, to and from the designated service facility (including any haul-out fees or storage fees).

In all warranty claims, ePropulsion will only bear the costs of diagnosing, repairing, or replacing a defective part. In no event shall ePropulsion or ePropulsion Authorized Distributor/dealer be liable for incidental, special or consequential damages. Such damages include, but are not limited to, loss of profits, haul-out fees, launching costs, towing, storage, slip fees, insurance coverage, loan payment, transportation costs, telephone charges, and mileage.

6.3 Miscellaneous

- Except as modified in writing and signed by the parties, and except where a commercial contract expressly provides otherwise, this Limited Warranty is and shall remain the complete and exclusive agreement between the parties with respect to warranties, superseding all prior written or oral agreements, and all other communications between the parties relating to warranties.
- No original equipment manufacturers, boat builders, ePropulsion product installers, distributors, dealers or any other person or entity has any authority to make any representation or promise on behalf of ePropulsion or to modify the terms or limitations of this Limited Warranty in any way, whether orally or in writing.
- This Limited Warranty is subject to German law, excluding the United Nations Convention on Contracts for the International Sale of Goods (CISG). The courts in Germany shall have exclusive jurisdiction. If you are a consumer and have your habitual residence in the EU, you may also bring your claim in the country in which you live and you additionally enjoy the protection afforded to you by the mandatory provisions of the law of your country of residence.

ePropulsion

(*In order to validate warranty, please fill in this form first and read the Warranty Policies.)

|| OWNER INFO. ||

Owner Name			
Address			
Phone		Email	

|| DEALER INFO. ||

Store Name			
Address			
Phone		Email	

|| PRODUCT INFO. ||

Date of Purchase (mm/dd/yyyy)	
Serial No.	

Thanks for reading this user manual.

If you have any concerns or find any problems while reading, please don't hesitate to contact us. We are delighted to offer service for you.

Guangdong ePropulsion Technology Limited

Webseite: www.epropulsion.com

E-Mail: service@epropulsion.com