Distribution Box
User Manual

96VDC

220VAC

2026.03 Version 1.0

Acknowledgements

Thank you for purchasing a product from ePropulsion. We are committed to providing you with cleaner, safer, and more reliable electric marine propulsion systems. We are confident you will be satisfied with our products and welcome you to visit our website at www.epropulsion.com.

Conditions of Use

Before using this product, please thoroughly read this manual to understand correct and safe operating procedures. Do not use the product until you have carefully reviewed the instructions and understood its capabilities. Use of this product signifies your agreement that you have fully read and understood all contents of this manual. Do not lend the product to individuals who are not trained to operate it. ePropulsion assumes no liability for any economic loss or personal injury resulting from operation not in compliance with this manual.

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Safety Warning

ePropulsion Technology places high importance on safety. We advise anyone closely interacting with ePropulsion products—such as those installing, operating, maintaining, or servicing them—to exercise caution, follow common sense, and adhere to the safety information in this manual and on the machine's installation stickers. This ensures the safety of personnel and property while minimizing safety risks.

The following symbols indicate relevant information on the manual or product label stickers:

When a danger or warning symbol appears, it indicates a potentially hazardous or highrisk situation that, if not avoided, could result in death or serious personal injury. Pay special attention and take it seriously, as it concerns your safety or the safety of the product.

Important warning:

Tips or important points of information that help quickly grasp the use of the energy device and enhance efficiency. Please read and follow the instructions following the safety warning signs.

Caution:

When installing, operating, maintaining or servicing ePropulsion products, there are many safety risks. It is essential to stay alert, carry out relevant tasks sensibly, and prioritize safety.

Electric shock hazard:

These areas or components may pose a risk of electric shock. The equipment uses 96VDC/ 220VAC power. When accessing or opening electrical connectors, switches, cables and other electricity-related items, turn off the power to prevent electric shock.

Burn hazard:

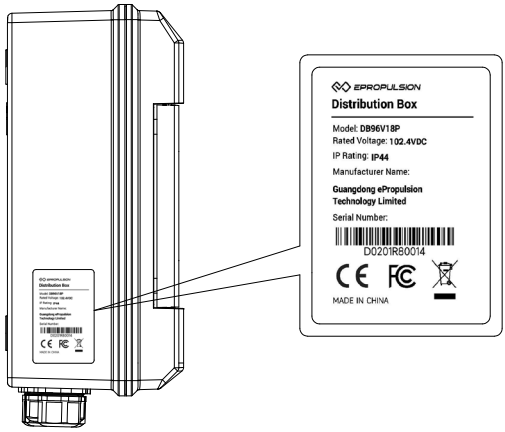
Some parts of the outboard become very hot during operation and may remain hot even after it is turned off. Keep hands and other body parts away from these areas.

Do not connect or disconnect when the outboard is running:

These parts may pose a risk of electric shock if connected to or disconnected from the power supply during operation.

Product Serial Number

The product serial number is a crucial document for warranty claims and other after-sales services. The serial number is located in the label as shown in the image below. Please locate this label on the product and record the displayed serial number. Do not remove the label, as doing so will void the product warranty.



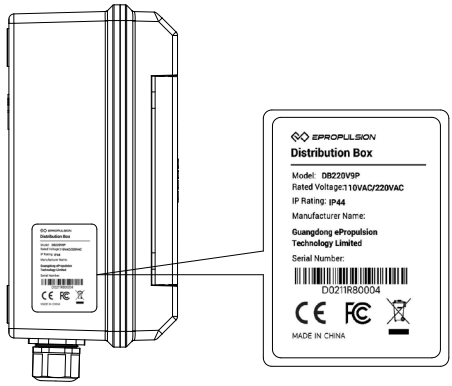


Table of Contents

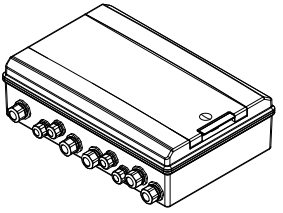
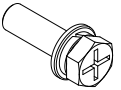
1 Product Introduction

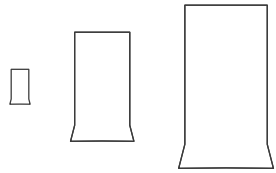
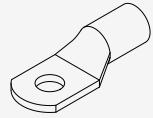
This product is a distribution box with built-in circuit breakers specifically designed for eSSA and eSSA EMS installations. It features appropriately rated MCBs and electrical interfaces tailored to meet the needs of these systems. It is available in two configurations:

- **Distribution Box 96VDC**
- **Distribution Box 220VAC**

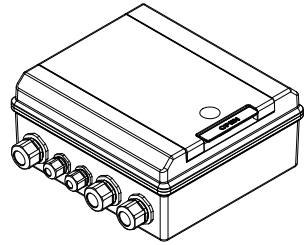
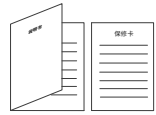
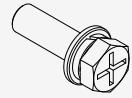
1.1 In the Package

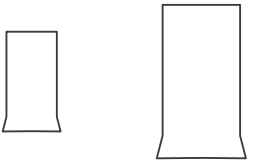
Distribution Box 96VDC

Items	Qty.	Figure
Distribution Box 96VDC	1	
User Manual	1	
Phillips-Socket Hex Head Tri-Combination Screw SUS304 M6×20	6	
Flat Washer SUS304 M6x12	6	
Hex Nut M6	6	
Silicone washer	6	
Self-tapping screw M6×16	6	

Items	Qty.	Figure
Cable Lug 4mm²	8	
Cable Lug 16mm²	3	
Cable Lug 25mm²	3	
Cable Lug SC50-8-L	3	

Distribution Box 220VAC

Items	Qty.	Figure
Distribution Box 220VAC	1	
Silica Gel Desiccant	1	/
User Manual	1	
Phillips-Socket Hex Head Tri-Combination Screw SUS304 M6×20	6	

Items	Qty.	Figure
Flat Washer SUS304 M6x12	6	
Hex Nut M6	6	
Silicone washer	6	
Self-tapping screw M6×16	6	
Cable Crimp Ferrule 4mm²	7	
Cable Crimp Ferrule 6mm²	10	

1.2 Specification

Content	Parameters
Dimensions	Distribution Box 220VAC: 219*220*99.5mm Distribution Box 96VDC: 381*270*113.5mm
Weight	Distribution Box 220VAC: 1.6kg Distribution Box 96VDC: 3.3kg
Protection Rating	IP44
Certifications	CE、FCC

1.3 Function

Switch Control: On/off switching for each branch during no-load.

Protection: Overcurrent and overload protection.

Power Distribution: Distribute electrical energy through Micro Circuit Breakers (MCB).

1.4 Declaration of Conformity

We Guangdong ePropulsion Technology Limited, hereby, declare that this equipment is in compliance with the applicable Directives and European Norms, and amendments.

Object of the Declaration:

Product: Distribution Box

Model: DB96V18P, DB220V9P

The object of the declaration is in conformity with the following directives:

Electromagnetic Compatibility (EMC) Directive 2014/30/EU

Restriction of Hazardous Substances Directive 2011/65/EU and Delegated Directive (EU) 2015/863

Regulation on General Product Safety 2023/988

EC REACH Regulation (EC 1907/2006)

Low Voltage Directive 2014/35/EU

Applied Standards:

EN IEC 61000-6-2:2019

EN IEC 61000-6-3:2021

IEC 60898-1:2019

IEC 60898-2:2016

FCC Compliance Statement:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Manufacturer

Name: Guangdong ePropulsion Technology Limited

Address: Room 801, Building 1, 11 Daxue Road, Songshan Lake, Dongguan, Guangdong Province, China

Signature:  **Date:** 2025.6.2

Shizheng Tao, Chief Executive Officer & Cofounder of

Guangdong ePropulsion Technology Limited

2 Product Installation & Wiring

2.1 Tool Preparation

Tool & Model	Specifications	Qty.	Purpose	Tightening(N·m)
Torque Wrench	Torque range: 0~24N·m	1	Control the screw torque during installation	/
PH2 Phillips Screwdriver	PH2	1	Tighten the screws at the wiring position of the circuit breaker	3.5~4.5
Flathead screwdriver	/	1	Tighten the screws which secure the distribution box	/
Electric Drill	/	1	Drill holes in the installation Panel	/
Cable Cutter	/	1	Cut the 50mm² cable	/
Cable Lug Crimping Pliers	/	1	Crimp SC50-8 cable lug	/
Cable Ferrule Crimping Pliers	/	1	Crimp Cable Ferrule	/
Utility knife		1	Strip the insulation of the cable	/
Scissors	/	1	Cut the copper wires of the shielding layer of cable	/
Heat gun	/	1	Shrink the heat-shrink tubing at the 50mm² cable crimp joint using a hot air gun.	/

2.2 Interface Diagram & Installation Requirement

1. Distribution Box 96VDC:

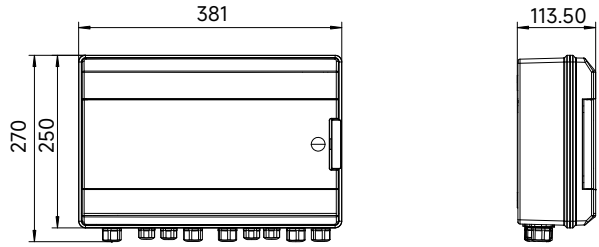


Figure 2-1

2. Distribution Box 220VAC:

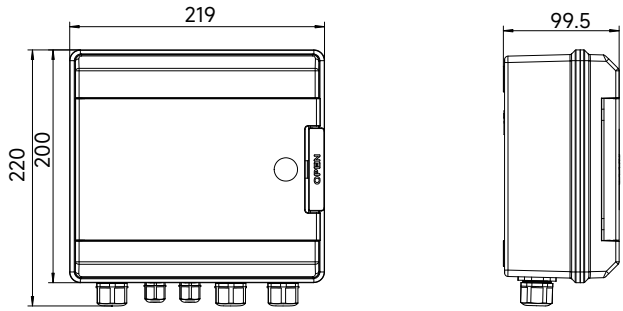


Figure 2-2

2.3 Interface Diagram

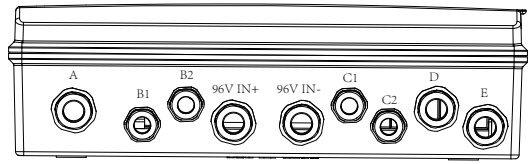


Figure 2-3

From left to right:

Equipment	Connection Method	Pin Definition	Wire Gauge	Interface Marking	Purpose	Circuit Breaker Rating
Distribution Box 96VDC	Crimp (cable crimp tubular terminals or bare wire)	PV+/PV-	4mm²x2, Outer Diameter 4–6mm	A	Input MPPT Connection	25A
	Crimp (cable crimp tubular terminals or bare wire)	DC+	25mm², Outer Diameter 8–12mm	B1	Input ACDC or Charger Connection	80A
	Crimp (cable crimp tubular terminals or bare wire)	DC-	25mm², Outer Diameter 8–12mm	B2		
	Crimped (cable crimp copper lug)	DC+	50mm², Outer diameter 15–18mm	96V IN+	BAT Connection	/
	Crimped (cable crimp copper lug)	DC-	50mm², Outer diameter 15–18mm	96V IN-		
	Crimp (cable crimp tubular terminals or bare wire)	DC+	16mm², Outer diameter 8–12mm	C1	Output DCAC Connection	80A
	Crimp (cable crimp tubular terminals or bare wire)	DC-	16mm², Outer diameter 8–12mm	C2	Output DCAC Connection	
	Crimp (cable crimp tubular terminals or bare wire)	DC+/DC-	2x4mm², Outer Diameter 7–9mm	D	Output LPWR Connection	25A
	ConnectorCrimp (cable crimp tubular terminals or bare wire)	DC+/ DC-	2x4mm², Outer Diameter 7–9mm	E	Output CPWR Connection	10A

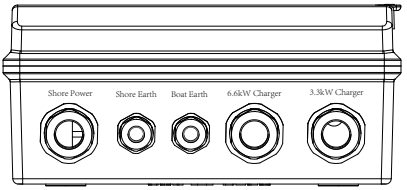


Figure 2-4

From left to right:

Equipment	Connection Method	Pin Definition	Wire Gauge	Interface Marking	Purpose	Circuit Breaker Rating
Distribution Box 230VAC	Crimp (cable crimp tubular terminals or bare wire)	L\N\PE	3x6mm², Outer Diameter 12–15mm	Shore Power	Input Connect to 220VAC shore power	40A With leakage protection
	Crimp (cable crimp tubular terminals or bare wire)	Shore Earth	6mm², Outer Diameter 4–6mm	Shore Earth	Connect shore power ground wire Connect one end to shore power isolator	/
	Crimp (cable crimp tubular terminals or bare wire)	Boat Earth	6mm², Outer Diameter 4–6mm	Boat Earth	Connect to vessel ground wire Connect the other end to shore power isolator	/
	Crimp (cable crimp tubular terminals or bare wire)	L\N\PE	3x6mm², Outer Diameter 12–15mm	6.6kW Charger	Output Connect to 6.6kW charger	40A
	Crimp (cable crimp tubular terminals or bare wire)	L\N\PE	3x2.5mm², Outer Diameter 10–13mm	3.3kW Charger	Output Connect to 3.3kW charger	20A

Note: If the circuit breakers in the distribution box do not meet your requirements, you may replace them yourself after contacting ePropulsion for confirmation.

Note: Different types of breakers can be modified later.

2.4 Installation Requirement & Steps

2.4.1 Materials Preparation

The distribution box includes four screws, four flat washers, four hex nuts, the expansion screw tube from the installation accessory kit, and cable crimp terminals.

2.4.2 Cable Preparation

Note: Before crimping terminals, verify the required cable length based on the distance between each device and the distribution box. Avoid discovering insufficient cable length after terminal crimping.

1. 96VDC Distribution Box: 50mm² Cable Preparation for 96V IN+/96V IN- Connectors, SC50-8-L Copper Ferrule Crimp

- Using a utility knife or wire stripper, strip the outer sheath and metal shielding layer by 30±5mm. Strip the inner sheath layer by 18±3mm. Ensure the remaining silver-colored metal shielding layer is less than 1mm in length. Contact between the metal shielding layer, conductor core, and terminal will cause insulation failure, rendering the system inoperable.

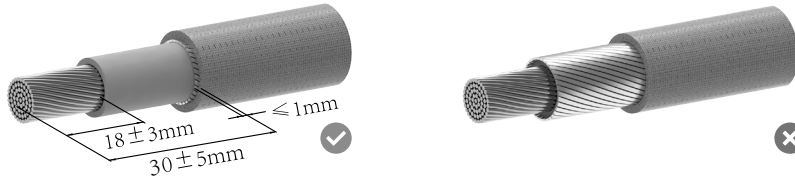


Figure 2-5

- Retrieve the SC50-8-L terminal from the accessories. Insert the stripped copper conductor into the terminal. Use your own crimping equipment to crimp the terminal. After crimping, remove any burrs and measure the dimension between opposite sides without burrs. This dimension must not exceed 10.7mm; otherwise, perform a second crimp. Poor crimping causes contact failure and may severely damage the circuit.

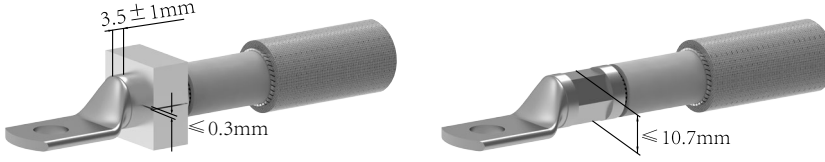


Figure 2-6

- Retrieve the SC50-8-L terminal from the accessories. Insert the stripped copper conductor into the terminal. Use your own crimping equipment to crimp the terminal. After crimping, remove any burrs and measure the dimension between opposite sides without burrs. This dimension must not exceed 10.7mm; otherwise, perform a second crimp. Poor crimping causes contact failure and may severely damage the circuit.

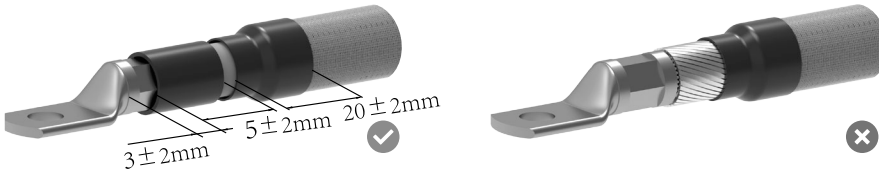


Figure 2-6

2. Preparing the remaining cables and crimping cable ferrules

- Using a utility knife or wire stripper, strip approximately 20mm of the outer sheath from the cable.
- Retrieve the cable ferrules included in the distribution box packaging. Insert the ferrule of the corresponding size onto the cable of the matching gauge. Use a ferrule crimping tool to crimp the ferrule onto the cable. This step consolidates the stripped copper conductors into a single bundle, preventing tangling and enhancing connection reliability.

⚠ To prevent incorrect wiring during subsequent cable connection steps (e.g., abnormal situations like reversing the positive and negative terminals of 96VDC or the live and neutral wires of 220VAC), ensure strict labeling on the cables.

2.4.3 Installation Requirements

Installation Requirements:

1. The product must be mounted on a flat side wall surface. The mounting location must have sufficient structural strength to support the product's weight (3.3 kg). A minimum clearance of 20 cm must be reserved below the product's wiring location to accommodate cable entry and bending.
2. All cable entry points on the product must be connected to the corresponding cables according to the labels at the enclosure's cable entry points.
3. Connect each device to its corresponding circuit breaker based on the labels affixed below the circuit breakers on the panel.

⚠ The product has an IP44 protection rating. It must be installed in a clean environment free from splash water risks and with low dust levels.

2.4.4 Installation Steps

1.Refer to the hole positions and installation requirements in the figure below. Use a hole punch to drill holes in the wall.

• **Distribution Box 96VDC**

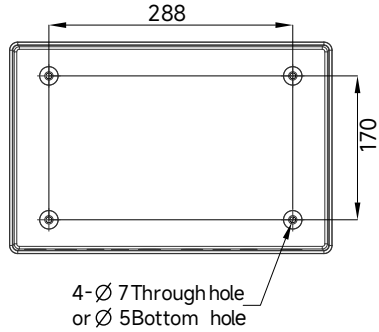


Figure 2-7

• **Distribution Box 220VAC**

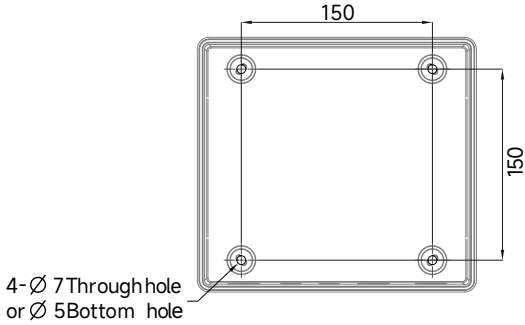


Figure 2-8

2. Remove the product: Take out the main body of the Distribution Box (96VDC/230VAC), the screw package, and the terminal block package from the product packaging.

3.Open the transparent top cover. Use a screwdriver to remove the four screws around the perimeter and detach the top cover panel of the distribution box. Before connecting cables, inspect and ensure the circuit breaker is in the open position, i.e., the circuit breaker handle is down.

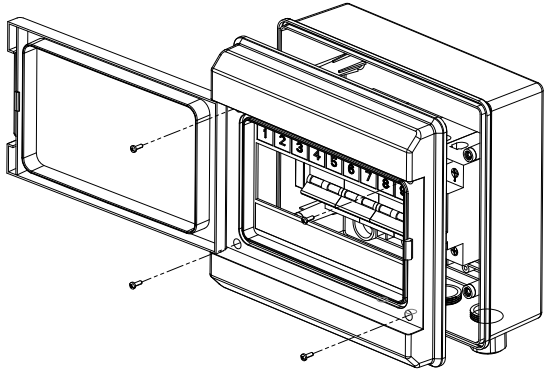


Figure 2-9

4. Mounting Method: The Distribution Box packaging includes two types of mounting accessories for securing the main unit:

   • Phillips-head hex socket cap screw (M6×20) + hex nut (M6): Suitable for mounting the distribution box body onto thin panels. This method requires pre-drilling four 7mm diameter holes in the mounting panel as shown below.First thread the silicone washers onto the screws. Then insert the four screws into the designated screw holes inside the distribution box. Tighten the screws and nuts as shown in the right diagram to secure the distribution box body.

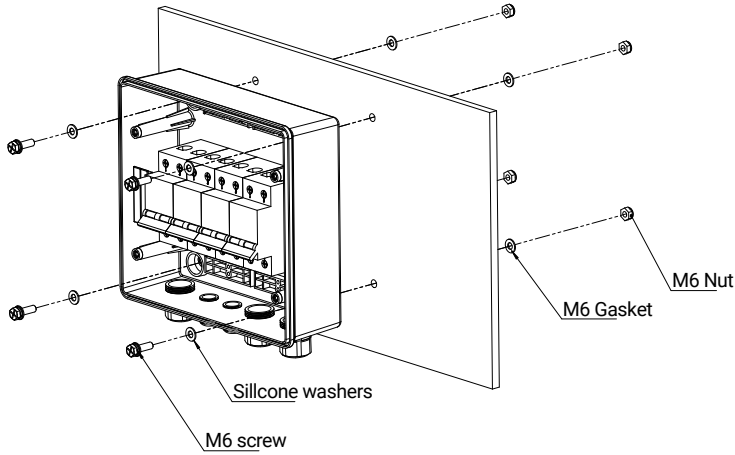


Figure 2-10

   • Self-tapping screws (M6): Suitable for mounting the distribution box body onto panels with a certain thickness. First, thread the silicone washers onto the screws. Then, using a Phillips screwdriver, secure the four self-tapping screws into the designated screw holes inside the distribution box and tighten them as shown below.

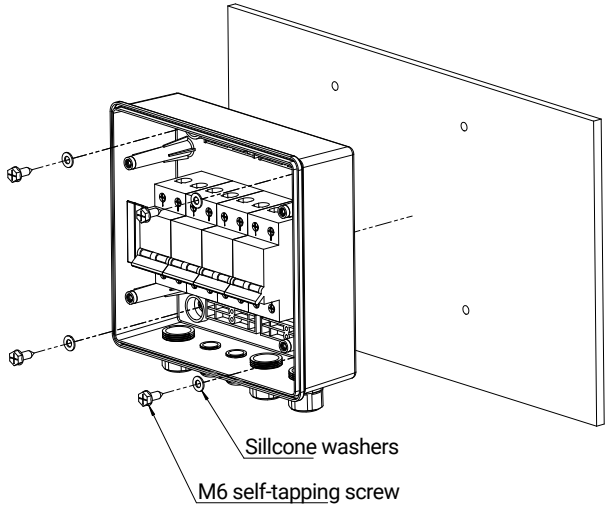


Figure 2-11

5. Remove the gland nut from the bottom of the distribution box and pull out the dust plug from the gland.

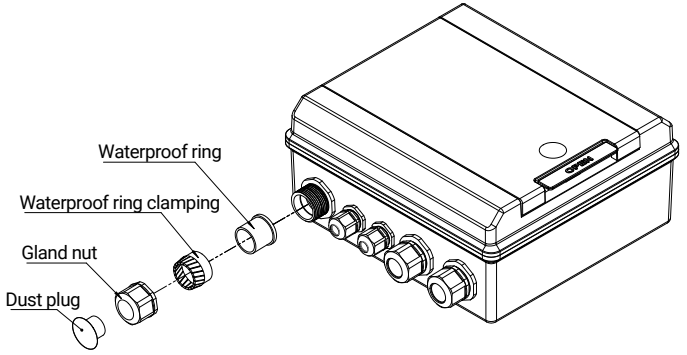


Figure 2-12

6.Following the connection diagram in Section 2.3 and the cable routing labels on the distribution box, thread the power cables for each device through the corresponding gland nuts, waterproof seal clamps, and waterproof seals in sequence (note the nut orientation). Then insert each device's power cable into its designated gland.

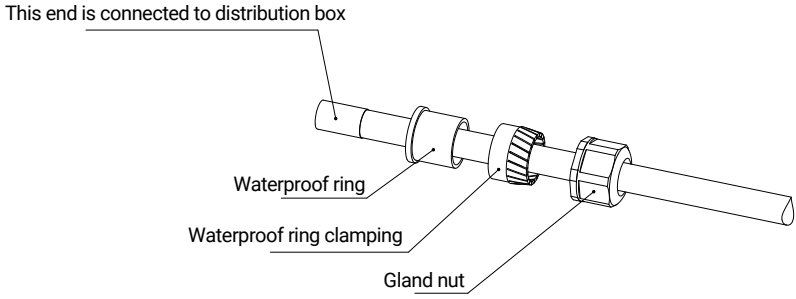


Figure 2-13

7. Connect the terminals prepared and crimped in Section 2.4.2 to the corresponding circuit breakers or terminal blocks according to the wiring labels on the distribution box. Use a torque wrench and Phillips screwdriver to tighten the screws on the circuit breakers and terminal blocks to the torque requirements specified in Section 2.1.

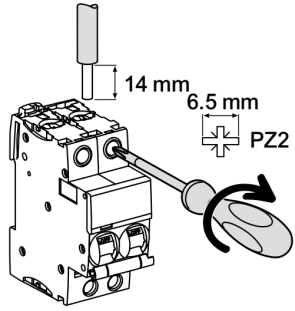


Figure 2-14

Strictly follow the cable routing and wiring labels on the distribution box to connect each cable to the correct position. Avoid reversing the positive and negative terminals inside the 96VDC distribution box, and avoid reversing the live and neutral wires inside the 220VAC distribution box. Reversal may cause equipment malfunction or damage.

The tightening torque for circuit breaker terminal screws must reach 3.5–4.5 N·m.
The tightening torque for the M6 screws on the 96V IN+/96V IN- terminals inside the 96VDC distribution box must reach 6–6.5 N·m.
The tightening torque for the M4 screws on the grounding busbar inside the 220VAC distribution box must reach 1.5–2 N·m.

8. Screw the gland nut onto the gland to secure the cable.

The gland nut only secures the cable and does not guarantee IP67 protection at the cable entry point of the distribution box.

9. Verify that all cable connections are secure and that no terminals are loose. The final wiring configuration after all connections are complete is shown in the figure below.

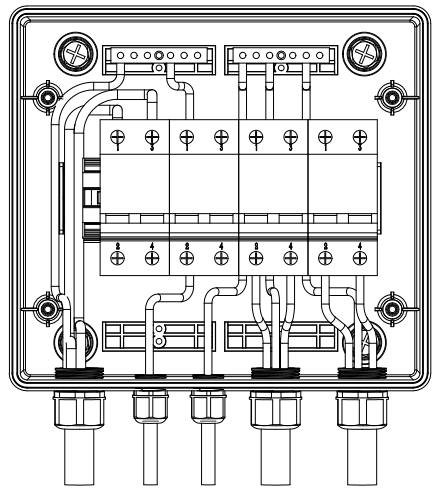


Figure 2-14

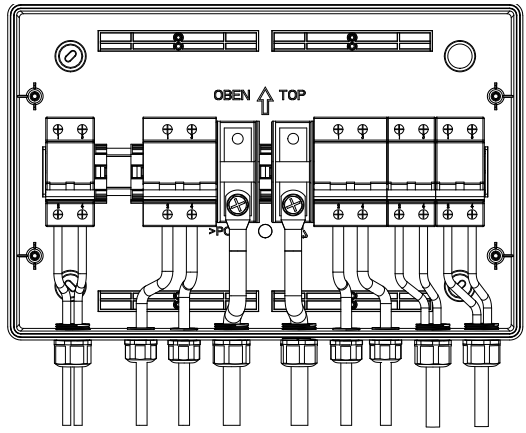


Figure 2-15

10. Reinstall the distribution box top cover panel removed in Step 3 onto the distribution box. Secure the top cover panel to the distribution box by tightening the four screws with a Phillips screwdriver.

2.5 Additional Notes on the Distribution Box 96VDC

By default, Port B of the 96V distribution box is used to connect a charger, and Port C is used to connect a DC-AC inverter. If you wish to use two chargers in parallel, connect the output cables of the two chargers to Port B and Port C, respectively. The two terminals on the double-pole circuit breaker corresponding to Ports B and C are non-polarized; therefore, there is no need to adjust the internal wiring of the circuit breaker.

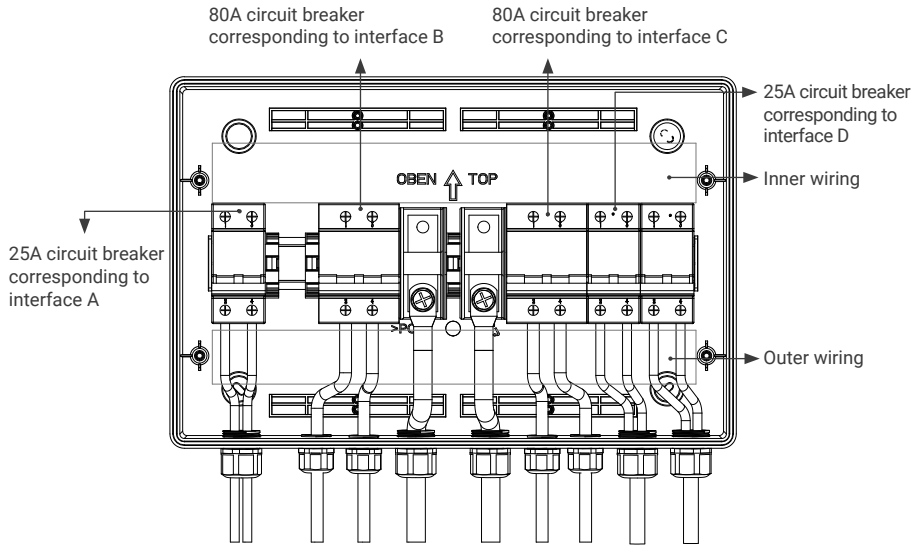


Figure 2-16

Port A of the 96V distribution box should be connected to DC 96V power supply equipment, while Ports D and C should be connected to DC 96V power-consuming equipment. If the input and output connections are reversed, it will affect the circuit breaker's protective function.

Power supply equipment refers to devices that charge the 96V traction battery, such as chargers, AC-DC rectifiers, and MPPT controllers.

Power-consuming equipment refer to equipment that draws power from the 96V traction battery, such as DC-AC inverters and DC-DC converters.

If you need to reverse the input and output configuration, swap the wiring positions of the red wire (DC 96V+) and blue wire (DC 96V-) on the inner (upper) side of the corresponding circuit breaker. Then, wire the terminals on the outer (lower) side of the circuit breaker according to the same color-coding relationship as the terminals on the inner (upper) side.

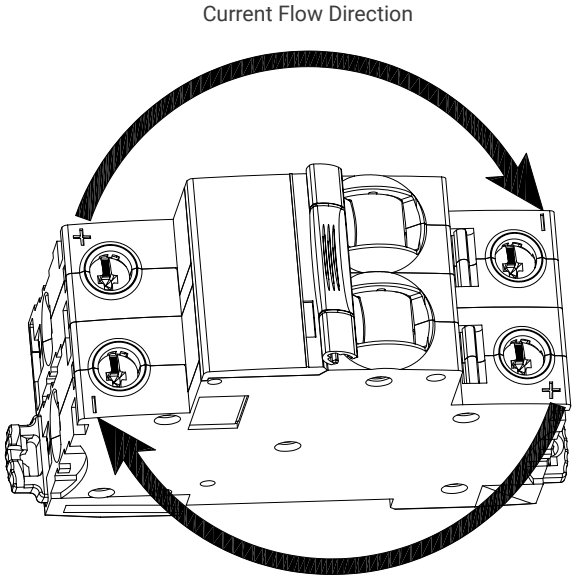


Figure 2-17

This is because the two terminals on the 2-pole circuit breakers corresponding to Interfaces A, D, and C are polarized. You can see the symbols “+” and “–” above the circuit breaker terminals. These symbols do not represent DC 96V+ and DC 96V–, but rather the direction of current flow; the current must flow from “+” to “–”.

When connecting a DC 96V power supply device to the lower side of the circuit breaker, since the power supply device acts as an input to the distribution box, current flows from the positive cable of the power supply device toward the distribution box. Therefore, the “+” terminal on the lower side of the circuit breaker must be connected to the positive cable of the power supply device, and the “–” terminal must be connected to the negative cable.

When connecting a 96V DC electrical device to the lower side of the circuit breaker, since the electrical device acts as an output relative to the distribution box, current flows from the red positive cable inside the distribution box to the electrical device. Therefore, the “–” terminal on the lower side of the circuit breaker must be connected to the positive cable of the electrical device, and the “+” terminal must be connected to the negative cable of the electrical device.

If you have any questions regarding the input/output configuration of the A, D, and E ports on the 96V distribution box, please contact ePropulsion.

3 Limited Warranty

Guangdong ePropulsion Technology Co., Ltd. (“ePropulsion”), China, warrants its products to be free of defects in material and workmanship under normal usage with proper installation and routine maintenance for a period of twenty-four (24) months from the date of delivery of invoice (the “Limited Warranty Period”). The Limited Warranty is provided to the first end customer of ePropulsion products ONLY. The Customer is entitled to free repair or replacement of defective or non-conforming parts. Any warranty claim must be made within six (6) months of discovery of issues as provided below.

If the Limited Warranty Period has expired, you can still enjoy maintenance services from dealers/distributors authorized by ePropulsion (the “ePropulsion Service Partners”) who will endeavour to keep costs to a minimum.

In all warranty cases, ePropulsion will only bear the repair or replacement cost for items that are covered by the Limited Warranty. Any costs not covered by the Limited Warranty – such as those related to product installation, disassembly, transportation, financing, rental, etc – shall be borne by the customer alone.

Beyond the Limited Warranty, the Customer may have statutory rights in their jurisdiction according to applicable laws. Nothing in this Limited Warranty affects such rights. The Customer may have warranty claim rights arising from the purchase contract with ePropulsion Service Partners in addition to the rights granted by this Limited Warranty.

Products used for commercial or professional purposes*, even if only temporarily, are not covered by the Limited Warranty. Instead, the statutory warranty in your jurisdiction shall apply. You are encouraged to consult with ePropulsion Service Partners for applicable warranty and advice before engaging in such use.

*** Commercial/Professional Purposes include those where the product is used with the intention of making profit, or high frequency, or very high reliability requirements, etc .**

To keep your warranty valid, please note the following:

- Products without the original product label will not be covered by ePropulsion’s Limited Warranty. Keep the product label intact and record the serial number from it. Never remove the label from the product;
- The Limited Warranty is not transferable and will not be reissued;
  The Limited Warranty may change from time to time. Please visit our website (http://www.epropulsion.com) for the latest version.

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Capacity guarantee for high-voltage batteries

A guarantee of the capacity of the high-voltage batteries, in addition to the standard guarantee. Depending on the long-term average temperature and the usage profile, this guarantee runs for a longer life.

Comment on average temperature:

The average temperature is calculated using the Arrhenius equation; this means that higher temperatures are given a greater weighting.

3.1 Warranty Exclusions

ePropulsion may refuse a warranty claim if:

- The product is operated in contradiction to what is written in the user manual;
- Damage is caused by accident, misuse, dropping, improper care or storage, wilful abuse, physical damage, unauthorized repair;
- Water ingress is caused by external sources such as fishing nets, submersion, etc;
- Product has been modified, altered, dismantled, or had parts/accessories attached in any way not expressly permitted or recommended by ePropulsion;
- Due to failure of, or damage caused by, any 3rd party products;
- The high-voltage batteries have been repositioned in the boat, without contacting ePropulsion service. Repositioning may result in changes to cabling, and other risks to system operation;
- The battery has been incorrectly charged, overcharged, over-discharged, or operated in temp out of scope described in the user manual;
- Consumables (such as replacement propeller, anodes, oil/fluids...etc.);
- Purchases of products from unauthorized dealers or sellers;
- Normal wear and tear and routine servicing;
- Damage caused by improper packing or handling of the product during its return. The additional damage part will be deemed out of warranty;
- Incorrect shipping of lithium batteries. These are classed as a UN9 hazardous item, and must be shipped in accordance with regulations in your jurisdiction. Non-compliance may result in warranty exclusion.

3.2 Limited Warranty Claim Procedures

The process shown below must be followed in order to make a Limited Warranty claim:

1. Contact your nearest ePropulsion Service Partner with details of the problem. They will advise if such defects are covered by the Limited Warranty or any additional rights you may have from your purchase.
2. Send the defective product to them (or the Service Partner they advise) together with Proof of 1(st)-time (first time) Purchase (e.g., receipt, invoice, etc., with information of product purchased and date of purchase), the Confirmation of Online Warranty Registration, ex-factory Serial Number, etc. Note that all labels must be kept intact. Warranty claims will only be valid only when the information above is correct, genuine, and complete.
3. Make sure the product is properly packed during delivery, the original packaging is highly recommended.
4. The ePropulsion Service Partner will examine and diagnose the defective products to check the validity of the warranty claim.
5. If your warranty claim is accepted, the Product or its defective components/parts will be either repaired or replaced free of charge. Note that any delivery cost incurred in the process shall be borne by you.
6. If your warranty claim is rejected, a repair/replacement cost and fee with round trip delivery cost will be estimated and sent to you for confirmation. ePropulsion Service Partners will only begin the work after your written confirmation that you wish to proceed with the repair/replacement and will pay for it.

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
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E-Mail: service@epropulsion.com