

ELECTRINE 2022



NEVER STOP GO AHEAD

YOUR RIDE FINALLY MEETS THE FUTURE

with Pure Electric Propulsion System





e-*OUTBOARD*

"BETTER PERFORMANCE
WITH BETTER CHOICE"



e-*INBOARD*

"SMOOTH OPERATION WITH
POWERFUL PERFORMANCE"



e-*SAILDRIVE*

"PERFECT BALANCE WITH
SILKY SMOOTH RIDING
EXPERIENCE"



BATTERY

"VERSATILE"





Zero
Noise



Zero
Maintenance



Zero
Emissions

e-*OUTBOARD* range of

40HP

60HP

90HP

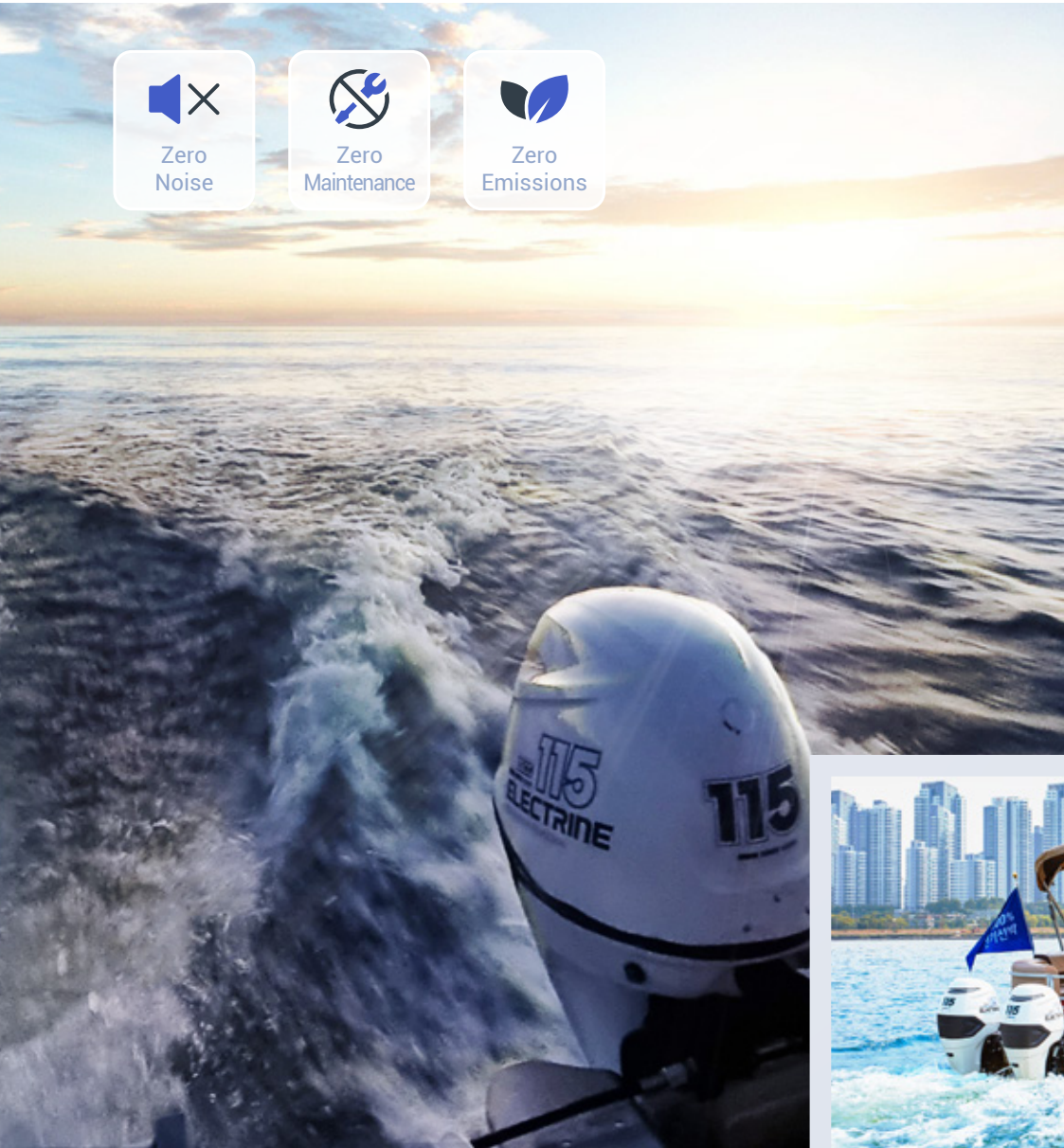
115HP

150HP

Variously applicable to small to mid sized boats, sailboats, water taxis, passenger ferries, and other vessels.

e-OUTBOARD series is the core product lineup of ELECTRINE with cutting-edge technology.

* 150HP : Available in 2023 / 200HP : Available in 2024



e-*OUTBOARD*

SYSTEM

TECHNICAL DATA
& PERFORMANCE

APPLICATION



Zero
Noise



Zero
Maintenance



Zero
Emissions

* 150HP : Available in 2023 / 200HP : Available in 2024



40HP



60HP



90HP



115HP

e-OUTBOARD

SYSTEM

**TECHNICAL DATA
& PERFORMANCE**

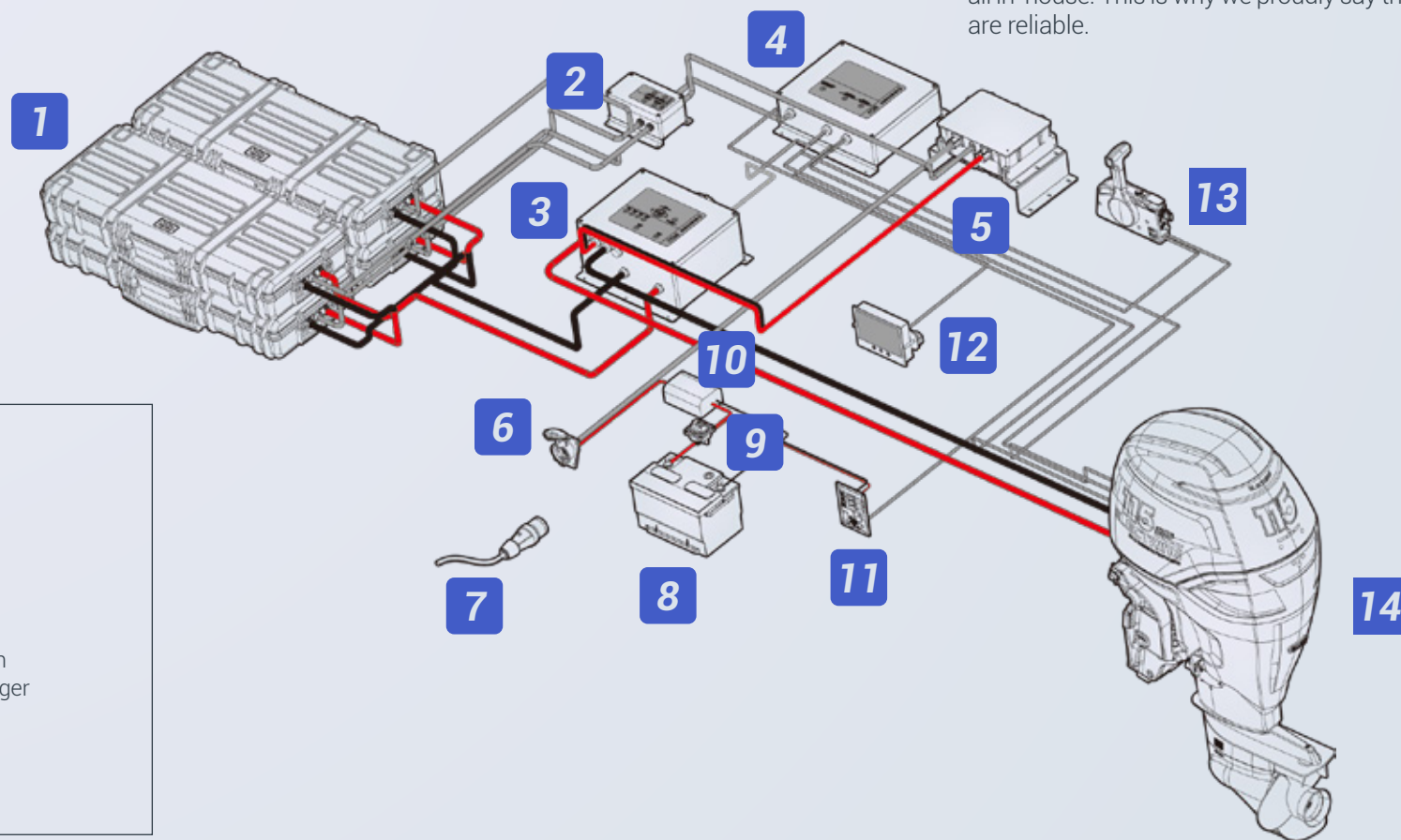
APPLICATION



e-**OUTBOARD** system

ELECTRINE Makes an Efficient System

ELECTRINE designed all core parts from scratch and make them all in-house. This is why we proudly say that ELECTRINE products are reliable.



e-**OUTBOARD**

SYSTEM

**TECHNICAL DATA
& PERFORMANCE**

APPLICATION

**40HP****60HP****90HP****115HP****ZO 40**

Max / Continuous Power (kW)	43 / 23	Weight of integrated battery (kg)	80 (20 x 4)
Max / Continuous Torque (N.m)	72 / 31	Shaft length (mm)	508
Max Operational Speed Range (rpm)	4000 - 5000	Standard propeller	11 1/4 x 14
Operating Battery Voltage (Vdc)	72~96	Max propeller speed in rpm at full load	2200~2500
Motor Efficiency at Optimal Operation (%)	90	Control	Throttle
Cooling Type	Cooling : Heat Exchanger Type	Steering	Steering Wheel or Tiller Handle
Communication	CAN 2.0b	Tilting device	Auto PTT
Size (mm)	575 x 410 x 1425	Trim device	Auto PTT
Weight (Kg)	95	Integrated display	yes
Battery Capacity (kWh)	14.52 (Standard)"		

Preview

There is nothing to compromise on your passion for the ocean. All fun factors are still with ELECTRINE e-OUTBOARD series.

**e-OUTBOARD****SYSTEM****TECHNICAL DATA
& PERFORMANCE****APPLICATION**



40HP

60HP

90HP

115HP

ZO 60



Max / Continuous Power (kW)	60 / 43	Weight of integrated battery (kg)	188 (47 x 4)
Max / Continuous Torque (N.m)	167 / 78	Shaft length (mm)	508
Max Operational Speed Range (rpm)	0-7,160	Standard propeller	12 1/2 x 13
Operating Battery Voltage (Vdc)	288~384	Max propeller speed in rpm at full load	2200~2500
Motor Efficiency at Optimal Operation (%)	90	Control	Throttle
Cooling Type	Cooling : Heat Exchanger Type	Steering	Steering Wheel or Tiller Handle
Communication	CAN 2.0b	Tilting device	Auto PTT
Size (mm)	575 x 410 x 1425	Trim device	Auto PTT
Weight (Kg)	110	Integrated display	yes
Battery Capacity (kWh)	3.87 (Standard)		

Preview

There is nothing to compromise on your passion for the ocean. All fun factors are still with ELECTRINE e-OUTBOARD series.



e-OUTBOARD

SYSTEM

TECHNICAL DATA
& PERFORMANCE

APPLICATION



40HP

60HP

90HP

115HP

ZO 90



Max / Continuous Power (kW)	110 / 65	Weight of integrated battery (kg)	188 (47 x 4)
Max / Continuous Torque (N.m)	255 / 105	Shaft length (mm)	508, 635
Max Operational Speed Range (rpm)	0-10,250	Standard propeller	13 3/4 x 15
Operating Battery Voltage (Vdc)	288~384	Max propeller speed in rpm at full load	2200~2500
Motor Efficiency at Optimal Operation (%)	92	Control	Throttle
Cooling Type	Cooling : Heat Exchanger Type	Steering	Steering Wheel or Tiller Handle
Communication	CAN 2.0b	Tilting device	Auto PTT
Size (mm)	728 x 479 x 1574	Trim device	Auto PTT
Weight (Kg)	150	Integrated display	yes
Battery Capacity (kWh)	33.87 (Standard)		

PERFORMANCE

Long Range ver.

Speed and distance *

ZO 90 with integrated 67.74 kWh battery
(345.6 V / 196 Ah)

	Speed in knot (km/hr)	Operating time (hr)	Total operating distance (km)
▶▶▶ Slow	5 (9.3)	11.0	102.3
▶▶▶ Half throttle	14 (25.9)	2.7	69.9
▶▶▶ Full throttle	25 (46.3)	0.85	39.3

* The figures shown above are not absolute and vary slightly depending on weather/water level and boat conditions.

e-OUTBOARD

SYSTEM

TECHNICAL DATA
& PERFORMANCE

APPLICATION



40HP

60HP

90HP

115HP

ZO 115



Max / Continuous Power (kW)	150 / 84	Weight of integrated battery (kg)	188 (47 x 4)
Max / Continuous Torque (N.m)	251 / 142	Shaft length (mm)	508, 635
Max Operational Speed Range (rpm)	0 - 8,000	Standard propeller	13 3/4 x 15
Operating Battery Voltage (Vdc)	288~384	Max propeller speed in rpm at full load	2200~2500
Motor Efficiency at Optimal Operation (%)	90	Control	Throttle
Cooling Type	Cooling : Heat Exchanger Type	Steering	Steering Wheel
Communication	CAN 2.0b RS232	Tilting device	Auto PTT
Size (mm)	728 x 479 x 1574	Trim device	Auto PTT
Weight (Kg)	150	Integrated display	yes
Battery Capacity (kWh)	33.87 (Standard)		

PERFORMANCE

Long Range ver.

Speed and distance*

ZO 115 with integrated 67.74 kWh battery
(345.6 V / 196 Ah)

	Speed in knot (km/hr)	Operating time (hr)	Total operating distance (km)
▶▶▶ Slow	5 (9.3)	11.0	102.3
▶▶▶ Half throttle	15 (27.8)	2.5	69.5
▶▶▶ Full throttle	27 (50.0)	0.74	37.0

* The figures shown above are not absolute and vary slightly depending on weather/water level and boat conditions.

e-OUTBOARD

SYSTEM

TECHNICAL DATA
& PERFORMANCE

APPLICATION



Engine Electric



e-Outboard 115HP



Busan



e-Outboard 110HP



Kunsan



e-Outboard 30HP



Tomoike



e-Outboard 90HP



Beijing Bonna Yacht



e-Outboard 90HP

e-OUTBOARD

SYSTEM

**TECHNICAL DATA
& PERFORMANCE**

APPLICATION



Zero
Noise



Zero
Maintenance



Zero
Emissions

e-INBOARD range of

40HP

60HP

90HP

115HP

350HP

Variously applicable to small to mid sized boats, sailboats, water taxis, passenger ferries, and other vessels.

e-INBOARD series will provide unforgettable experiences on the water. All products are suitable for both saltwater and freshwater. You can enjoy maintenance-free and cost-saving pure electric propulsions.



e-INBOARD

SYSTEM

TECHNICAL DATA
& PERFORMANCE

APPLICATION



Zero
Noise



Zero
Maintenance



Zero
Emissions

* 150HP : Available in 2023 / 200HP : Available in 2024



40HP

60HP

90HP

115HP

350HP

e-INBOARD

SYSTEM

**TECHNICAL DATA
& PERFORMANCE**

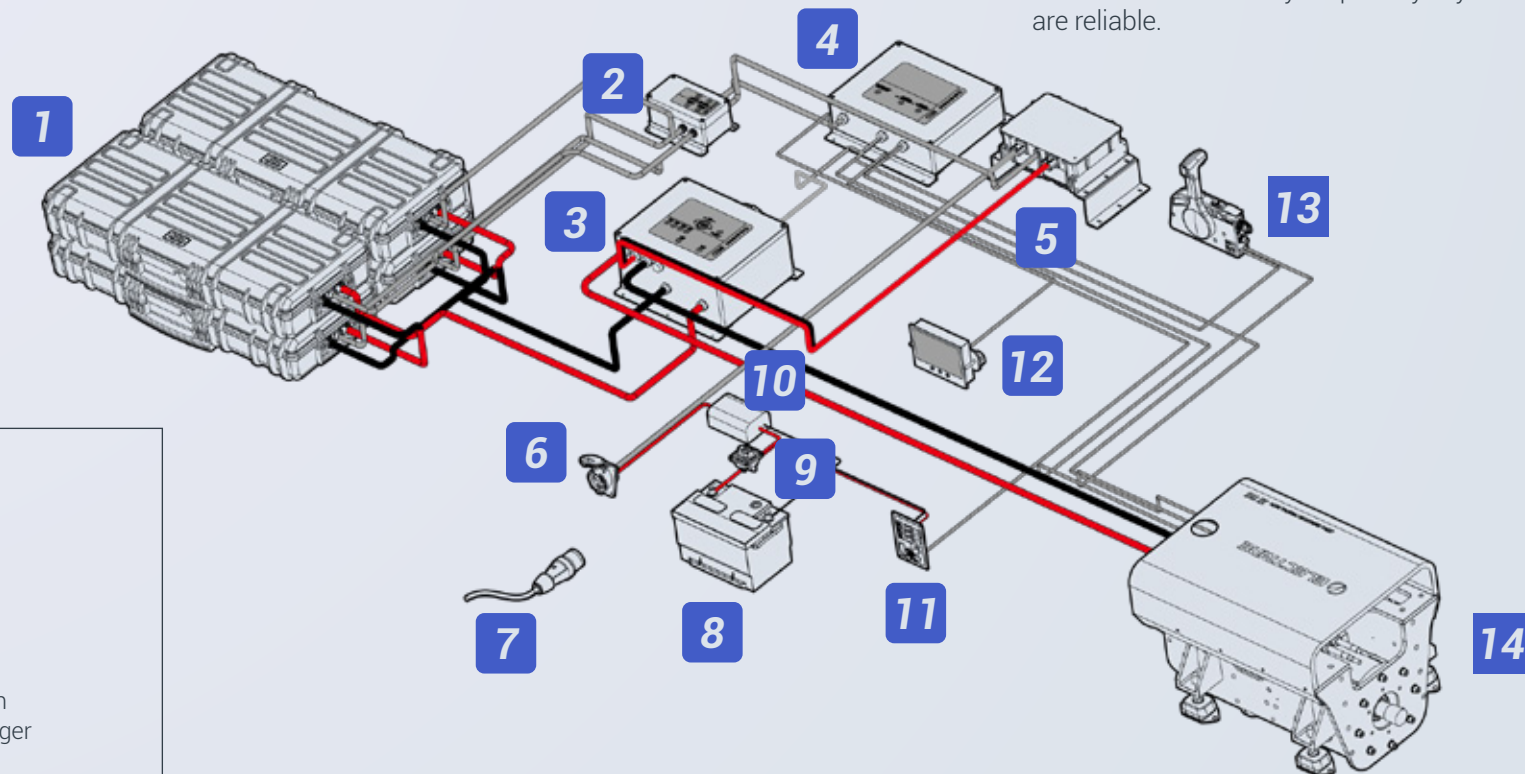
APPLICATION



e-INBOARD system

ELECTRINE Makes an Efficient System

ELECTRINE designed all core parts from scratch and make them all in-house. This is why we proudly say that ELECTRINE products are reliable.



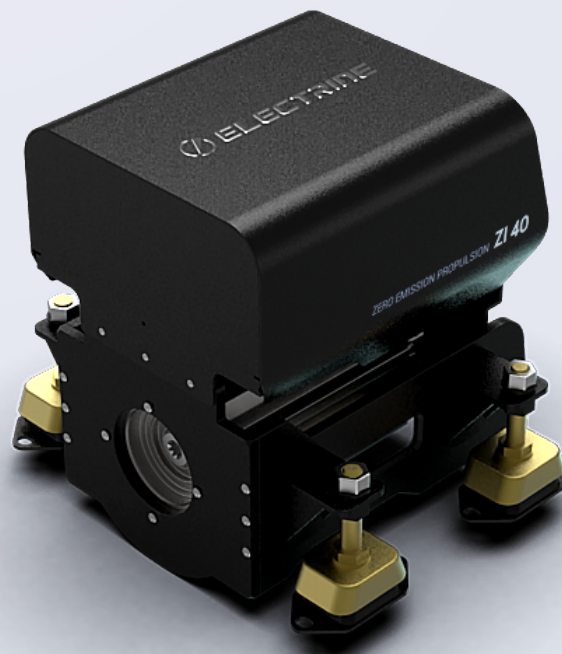
- 1. Battery Pack
- 2. Junction Box
- 3. IPDU
- 4. BCU
- 5. OBC
- 6. Charging Socket
- 7. Charging Plug
- 8. 12V Battery
- 9. 12V Battery Switch
- 10. 12V Battery Charger
- 11. Switch Panel
- 12. Display
- 13. Throttle Lever
- 14. Electric Inboard

e-INBOARD

SYSTEM

**TECHNICAL DATA
& PERFORMANCE**

APPLICATION

**40HP****60HP****90HP****115HP****350HP****ZI 40**

Max / Continuous Power (kW)	43 / 23	Weight (Kg)	-
Max / Continuous Torque (N.m)	72 / 31	Battery Capacity (kWh)	14.52 (Standard)
Max Operational Speed Range (rpm)	0-8,006	Weight of integrated battery (kg)	80 (20 x 4)
Operating Battery Voltage (Vdc)	72~96	Control	Throttle
Motor Efficiency at Optimal Operation (%)	90	Steering	Steering Wheel
Cooling Type	Cooling : Heat Exchanger Type	Liquid Cooling	Sea Water, 7 l/min, max. 32°C
Communication	CAN 2.0b	Integrated display	yes
Size (mm)	390 x 359.4 x 322.6		

Preview

ELECTRINE e-INBOARD series provides stunning performance from 40HP to 350HP with smooth performance. Your ride finally meets the future.

**e-INBOARD****SYSTEM****TECHNICAL DATA
& PERFORMANCE****APPLICATION**



40HP

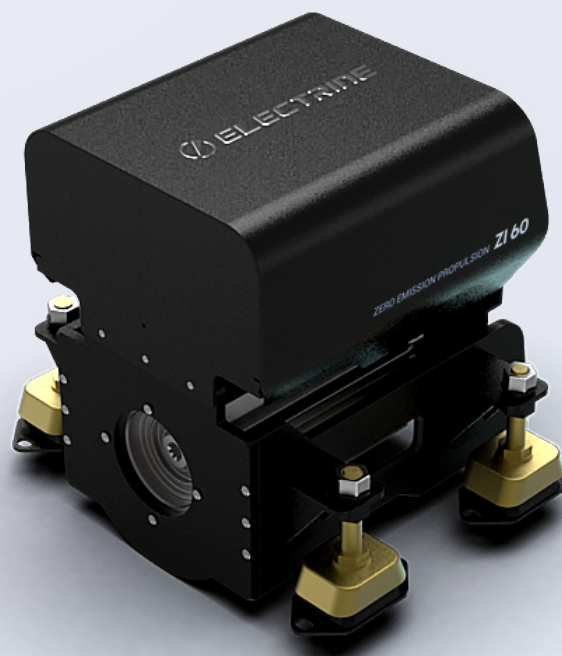
60HP

90HP

115HP

350HP

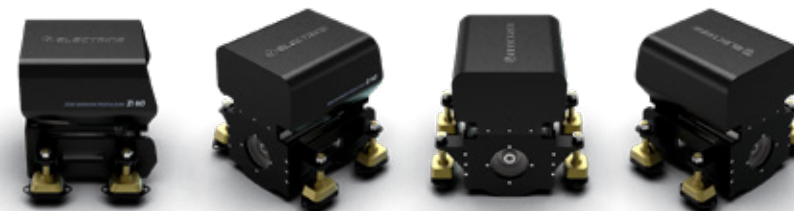
ZI 60



Max / Continuous Power (kW)	60 / 43	Weight (Kg)	-
Max / Continuous Torque (N.m)	167 / 78	Battery Capacity (kWh)	33.87 (Standard)
Max Operational Speed Range (rpm)	0-7,160	Weight of integrated battery (kg)	188 (47 x 4)
Operating Battery Voltage (Vdc)	288~384	Control	Throttle
Motor Efficiency at Optimal Operation (%)	90	Steering	Steering Wheel
Cooling Type	Cooling : Heat Exchanger Type	Liquid Cooling	Sea Water, 7 l/min, max. 32°C
Communication	CAN 2.0b	Integrated display	yes
Size (mm)	390 x 359.4 x 322.6		

Preview

ELECTRINE e-INBOARD series provides stunning performance from 40HP to 350HP with smooth performance. Your ride finally meets the future.

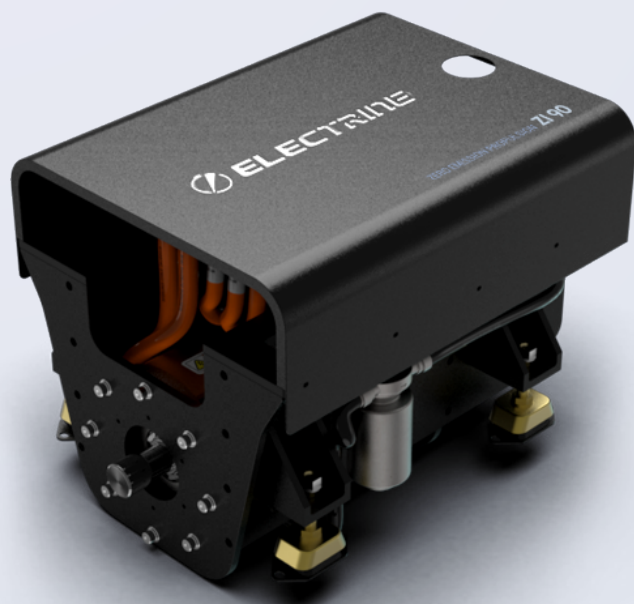


e-INBOARD

SYSTEM

TECHNICAL DATA
& PERFORMANCE

APPLICATION

**40HP****60HP****90HP****115HP****350HP****ZI 90**

Max / Continuous Power (kW)	110 / 65	Weight (Kg)	93.5
Max / Continuous Torque (N.m)	255 / 105	Battery Capacity (kWh)	3.87 (Standard)
Max Operational Speed Range (rpm)	0-10,250	Weight of integrated battery (kg)	188 (47 x 4)
Operating Battery Voltage (Vdc)	288~384	Control	Throttle
Motor Efficiency at Optimal Operation (%)	92	Steering	Steering Wheel
Cooling Type	Cooling : Heat Exchanger Type	Liquid Cooling	Sea Water, 7 l/min, max. 32°C
Communication	CAN 2.0b	Integrated display	yes
Size (mm)	664.2 x 468 x 475.4		

Preview

ELECTRINE e-INBOARD series provides stunning performance from 40HP to 350HP with smooth performance. Your ride finally meets the future.

**e-INBOARD****SYSTEM****TECHNICAL DATA
& PERFORMANCE****APPLICATION**



40HP

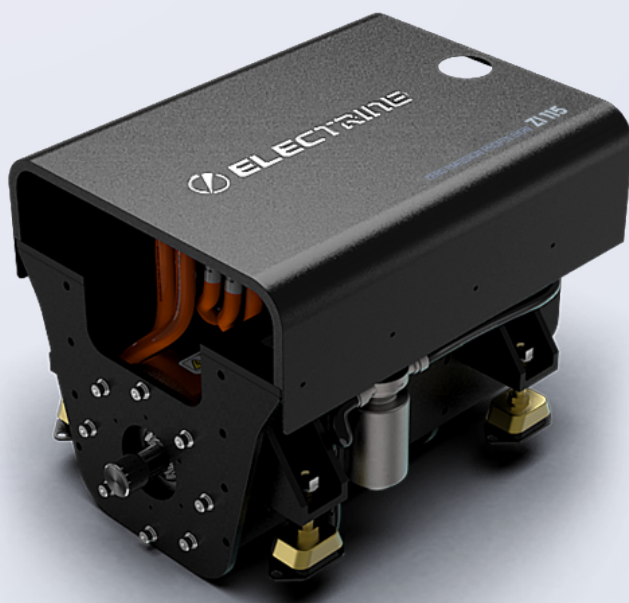
60HP

90HP

115HP

350HP

ZI 115



Max / Continuous Power (kW)	150 / 84	Weight (Kg)	93.5
Max / Continuous Torque (N.m)	251 / 142	Battery Capacity (kWh)	3.87 (Standard)
Max Operational Speed Range (rpm)	0 - 8,000	Weight of integrated battery (kg)	188 (47 x 4)
Operating Battery Voltage (Vdc)	288~384	Control	Throttle
Motor Efficiency at Optimal Operation (%)	90	Steering	Steering Wheel
Cooling Type	Cooling : Heat Exchanger Type	Liquid Cooling	Sea Water, 7 l/min, max. 32°C
Communication	CAN 2.0b RS232	Integrated display	yes
Size (mm)	664.2 x 468 x 475.4		

Preview

ELECTRINE e-INBOARD series provides stunning performance from 40HP to 350HP with smooth performance. Your ride finally meets the future.



e-INBOARD

SYSTEM

TECHNICAL DATA
& PERFORMANCE

APPLICATION



40HP

60HP

90HP

115HP

350HP

ZI 350

Max / Continuous Power (kW)	250 / 246	Weight (Kg)	500
Max / Continuous Torque (N.m)	2,700 / 2,230	Battery Capacity (kWh)	33.87 (Standard)
Max Operational Speed Range (rpm)	0-3,375	Weight of integrated battery (kg)	188 (47 x 4)
Operating Battery Voltage (Vdc)	500~738	Control	Throttle
Motor Efficiency at Optimal Operation (%)	94	Steering	Steering Wheel
Cooling Type	Cooling : Heat Exchanger Type	Liquid Cooling	Sea Water, 7 l/min, max. 32°C
Communication	CAN 2.0b	Integrated display	yes
Size (mm)	902 x 1200 x 733		

Preview

ELECTRINE e-INBOARD series provides stunning performance from 40HP to 350HP with smooth performance. Your ride finally meets the future.

**e-INBOARD****SYSTEM****TECHNICAL DATA
& PERFORMANCE****APPLICATION**



Ansan



Inboard 350HP x 2

700 HP FERRY PROJECT IN 2021

Twin ELECTRINE ZI 350 generates a total of 700 HP. They were developed and installed to the largest and the first pure electric ferry ever built in South Korea. The battery packs were also designed and made by ELECTRINE to provide the maximum power for the ferry.



KHNT



Inboard 90HP



KR



Inboard 115HP



Ruckmarine



Inboard 90HP

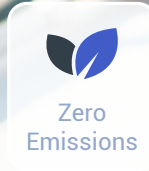
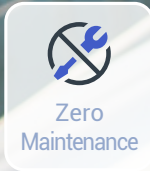
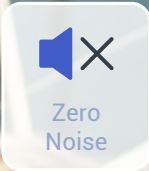
Inboard 350HP x 2

e-INBOARD

SYSTEM

TECHNICAL DATA
& PERFORMANCE

APPLICATION



e-SAILDRIVE range of

8HP

16HP

It is used for sailing yachts and catamarans. It is light and has almost no noise or vibration.

The best partner for zero-emission sailing yachts.

ELECTRINE e-SAILDRIVE series was developed for true sailing enthusiasts gliding along on water with natural wind power.

Supporting the eco-friendly spirit by using natural power for the ride, ELECTRINE focused on the value of environmental friendliness.

ELECTRINE e-SAILDRIVE series allows you to enjoy your sailing experiences with a more efficient and silent ride.

e-SAILDRIVE

INTRODUCTION

**TECHNICAL DATA
& PERFORMANCE**



Now you fully enjoy your water activity while protecting the beautiful marine ecosystem at the same time



e-SAILDRIVE

INTRODUCTION

**TECHNICAL DATA
& PERFORMANCE**

**8HP****16HP****ZS 8**

Max / Continuous Power (kW)	8 / 6	Size (mm)	649 x 400 x 1028
Operational Speed (rpm)	0 ~ 3,100	Weight (kg)	40.5
Reduction Ratio	1.93 : 1	Weight of integrated battery (kg)	20
Rated Battery Voltage (Vdc)	48	Standard propeller	17 x 14 LH, 3B
Communication	CAN 2.0b	Control	Throttle
Installation Optimal to	Daysailer / Racing	Steering	Steering Wheel
Min. Regenerating Speed (Kn)	5.8	Integrated display	yes
Max. Regenerating Output (kW)	3		

Preview

ELECTRINE e-SAILDRIVE series provides the perfect balance between smooth sailing and quiet cruising.

**e-SAILDRIVE****INTRODUCTION****TECHNICAL DATA
& PERFORMANCE**

8HP**16HP****ZS 16**

Max / Continuous Power (kW)	16 / 11	Size (mm)	649 x 400 x 1028
Operational Speed (rpm)	0 ~ 3,100	Weight (kg)	46.5
Reduction Ratio	1.93 : 1	Weight of integrated battery (kg)	20
Rated Battery Voltage (Vdc)	48	Standard propeller	17 x 14 LH, 3B
Communication	CAN 2.0b	Control	Throttle
Installation Optimal to	Daysailer / Racing	Steering	Steering Wheel
Min. Regenerating Speed (Kn)	5.8	Integrated display	yes
Max. Regenerating Output (kW)	3		

Preview

ELECTRINE e-SAILDRIVE series provides the perfect balance between smooth sailing and quiet cruising.

**e-SAILDRIVE****INTRODUCTION****TECHNICAL DATA
& PERFORMANCE**



BATTERY range of

Fixed Type

Rack Type

FOR YOUR ENJOYMENT LASTING LONGER

ELECTRINE BATTERY PACKS can be added as many as you need *

ELECTRINE built its battery packs from the scratch. All battery packs are smoothly integrated with all ELECTRINE electric propulsion series, and this is why we put a great effort into developing our battery packs. ELECTRINE's battery pack is industry's unique and one of a kind.

"STRONG, SMOOTH, AND SAFE"



Modular



Rapid
Charging

* all the information and conditions of your boat must be provided before the maximum battery pack load is calculated.



BATTERY

INTRODUCTION

TECHNOLOGY

**TECHNICAL DATA
& PERFORMANCE**



VERSATILE

As everyone's dream is different from each other, every customer has different needs.

We designed and developed our own ELECTRINE battery modules and packs that can be expandable to fulfill the desired power.

All ELECTRINE battery products meet the most safety regulations and requirements to guarantee your safety and maximize the performance to satisfy your needs as well. Your safety and satisfaction matter to us.



BATTERY

INTRODUCTION

TECHNOLOGY

**TECHNICAL DATA
& PERFORMANCE**



“FOR YOUR ENJOYMENT LASTING LONGER”

ELECTRINE BATTERY PACKS can be added as many as you need.*

*all the information and conditions of your boat must be provided before the maximum battery pack load is calculated.



BATTERY

INTRODUCTION

TECHNOLOGY

**TECHNICAL DATA
& PERFORMANCE**



SUPER SAFE BATTERY POWERPACK TECHNOLOGY

Battery Heat Control System

Applied the CNT (Carbon Nano Tube) heat exchange technology / Maximizing battery efficiency even in low temperature

Battery Temperature Control System

Maintaining the optimal temperature to let the battery system operate in the best condition

Battery Control

- Efficient control and management of Li-ion battery

External Material

- P.P is applied to absorb shock, high elasticity, acid resistance, lightweight and scratch-resistant
- The influence of external temperature and maintains internal temperature consistently with its heat fiber and cooling pipe

Easy Battery Replacement

- One-touch battery swapping system

Cooling System

- Maintains internal temperature and heat conduction by applying the copper pipe
- Overheating prevention system by applying refrigerants

Optimized Battery Case for Water Resistance

- IP67-level waterproof
(Protected from immersion up to 1m in depth)

**14.52kWh****BF 86**

Nominal Voltage (Vdc)	86.4 (43.2 x 2ea)
Nominal Capacity (Ah)	168 (84 x 2ea)
Energy (kWh)	14.52
Operating Voltage (Vdc)	67.2 - 98.4
Charging Voltage (Vdc)	98.4
Charging Current	Standard 84A (0.5 C-rate)
Discharging Current / Instant	Max 240A (1.43 C-rate)
Communication / Master to Pack	CAN 2.0b
Operation Temperature (Ambient)	-10 °C ~ 60 °C
Configuration	4 Module
Size (mm)	485 x 830 x 298
Weight (kg)	80 (20 x 4)
IP Rating	IP67

33.87kWh**BF 345**

Nominal Voltage (Vdc)	345.6 (86.4 x 4ea)
Nominal Capacity (Ah)	98
Energy (kWh)	33.87
Operating Voltage (Vdc)	288 - 384
Charging Voltage (Vdc)	393.6
Charging Current	Standard 30A (0.3 C-rate)
Discharging Current / Instant	Max 280A (2.85 C-rate)
Communication / Master to Pack	CAN 2.0b
Operation Temperature (Ambient)	-10 °C ~ 60 °C
Configuration	4 Module
Size (mm)	1,000 x 830 x 314
Weight (kg)	188 (47 x 4)
IP Rating	IP67

BATTERY**INTRODUCTION****TECHNOLOGY****TECHNICAL DATA
& PERFORMANCE**

100kWh

BR 654



Nominal Voltage (Vdc)	654.3 (43.6 x 15ea)
Nominal Capacity (Ah)	154
Energy (kWh)	100 (6.7 x 15ea)
Operating Voltage (Vdc)	654.3 V
Charging Voltage (Vdc)	736 V
Charging Current	77A (0.5 C-RATE)
Discharging Current / Instant	MAX. 154 (1 C-RATE)
Communication / Master to Pack	CAN 2.0
Operation Temperature (Ambient)	-20 °C ~ 60 °C
Configuration	15 Module
Size (mm)	"1899 x 580 x 886 ± 10
Weight (kg)	(Module : 617 x 603 x 134)" 720 ± 5 (Module : 45 x 15)
IP Rating	IP55

Preview

Rack Type (15 Module) battery is a high-capacity battery package that can be customized depends on your performance requirement.



BATTERY

INTRODUCTION

TECHNOLOGY

TECHNICAL DATA
& PERFORMANCE



SAFETY and DURABILITY

Securing Safety and Durability by Being Certified Official Test

> CE-DoC Acquisition (CHINA – CCS / JAPAN – JCI)

Reliability

1. EMI / EMC Test

Conducted & Radiated Emissions / Immunity to electrostatic discharge & radiated radio frequency fields / etc.



2. Environmental Test

High-voltage / Cold / Dry-heat / Salt-mist / etc.



Durability

1. Motor Output Test

Rated Output / Overload / Over-current test / Over-speed / etc.



2. IP Code Test

Motor / Driver: IPx7
Battery Pack : IP67



Qualified Performance Approved by Hundreds of Field Tests and Direct Operations Over Years

> Improvement of Technology and Product Completeness

Field Operation (2015 to 2022)

1. Electric Outboard

Manufacturing all in one electric Outboard Propulsion
Anti-Freezing
Applying e-Outboard Propeller etc.



2. Electronic System

Building up Monitoring Functions etc.



3. Li-ion Battery Pack

CBS (Cartridge Battery System)
E-shock Prevention
Gas leaks detection sensor etc.



APPENDIX_01

APPENDIX_02

APPENDIX_03

APPENDIX_04



PATENTS

Motor & Powertrain Patents

(Registered) Brushless Direct Current Motor
(Registered) Permanent Magnet Type Motor
(Registered) Propulsion System Of Boat

Battery Patents

(Registered) Plate & Electrolyte Fuel Cell Using Metal with Nitride Titanium
(Registered) Input Control Circuit for Battery Management System
(Registered) Battery case system having good heating and cooling
(Registered) Waterproof One-touch Battery Connection System

(Pending) Battery charging method
(Pending) Efficiency Water Cooling Battery System
(Pending) / Auto-swapping System of Electronic Propulsion System (pct)
(Pending) Overheating protection device and method of overheating protection of ship battery packs

Inverter Patents

(Registered) Brushless Operation Equipment & Method Of Brushless Direct Current Motor
(Registered) Control System Strong Of Electric Boats For Resistance Against Wave
(Registered) Apparatus For Brushless Dc Motor
(Registered) Control Device And Method Thereof
(Registered) Driving Apparatus

(Pending) Propeller-type Control System For Ships
(Pending) Power transmission device for small sized ships
(Pending) Control system for automatically bring a vessel alongside the pier using dual outboard motor located in vessel stern and the method thereof



Extra Patents

(Registered) Communication Method by Radio Receiver Without PLL Frequency Synthesizer
(Registered) Controlling Apparatus of Refrigeration Vehicle (1)
(Registered) Controlling Apparatus of Refrigeration Vehicle (2)
(Registered) Embedded System and Its GUI Display Method
(Registered) control system using joystick

(Pending) Performance electronic propulsion watercraft
(Pending) Controlling device of vessel and its controlling method
(Pending) Control system for dual outboard motor and the method thereof
(Pending) Control system for dual outboard motor and the method thereof
(Pending) Boat location system based on android
(Pending) monitoring and control system of hybrid ship's battery status and method
(Pending) Positioning control system of boat having dual outboard motor



PERFORMANCE CHART



ELECTRINE
Z0115
(115 HP)

- Our standard product with a pack of 33.8kWh lithium-ion batteries
- Test Environment: Operation in Inland Water, Han River in Seoul



5 kts
(5.7 mph)



15 kts
(17.2 mph)



27 kts
(31 mph)



• Hull alignment, multiple deviations depending on operating environment

APPENDIX_01

APPENDIX_02

APPENDIX_03

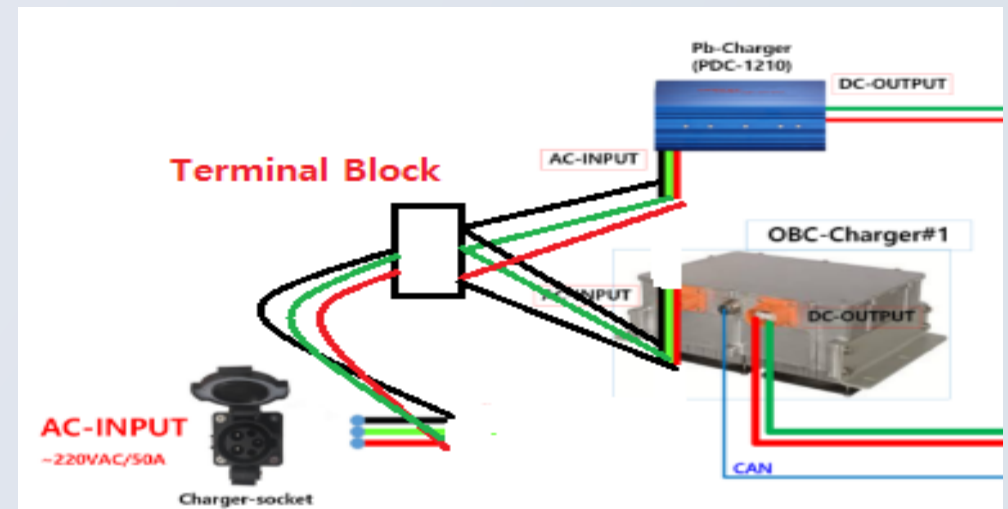
APPENDIX_04



BATTERY CHARGING SPECIFICATION

For the high-performance battery packs : **Over 300HP systems** (for large commercial boats)

ENERGY CAPACITY	CHARGING TIME
14.5 kWh	4 – 5 hours
33.8 kWh	5 – 6 hours
100 kWh	3 – 4 hours





EP vs. ICE

ADVANTAGES

1. Less maintenance cost
2. Less repair cost
3. Ecofriendly
4. global zero emission law
5. Zero noise, Zero emissions
6. Longer warranty of 3 years compared to our competitor's 1 year
7. Easy installation
8. Easy to charge (plug and play)

DISADVANTAGES

1. More expansive than ICE (versus same power)
2. Heavy Weight of battery (battery weight can have a significant impact on vessel performance)
3. Less usage time compared to ICE
4. Large differences in usage time depending on the speed and way of operation



APPENDIX_01

APPENDIX_02

APPENDIX_03

APPENDIX_04



COST SAVING CHART

ICE(Internal Combustion Engine) Vs. Electric **About "4 times more" fuel cost saving annually**

		Purchase Price	Fuel Consumption	Daily Consumption (3 hours/day)	Annual Consumption	Remarks
115HP Products	GASOLINE (YAMAHA 115HP)	22,000 USD	9.6Gal/hr (@wot rpm) + Maintenance cost	120.6 USD	43,441.9 USD	Reg. Gas Price 4.19USD/Gal*
	ELECTRIC (Z0115)	75,000 USD	84kW/h (max)	29.2 USD	10,523.5 USD	Electricity Ave. Price 0.116 USD/kWh**
Comparison		53,000 USD	-	91.4 USD	32,918.4 USD	After 2 YRS Yamaha : 98,783.8 USD Z0115 : 86,047.0 USD

*June 9, 2022. AAA Gas Price (<https://gasprices.aaa.com/state-gas-price-averages/>)

**Average All Sector Electricity Price in March 2022 (https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a)

APPENDIX_01

APPENDIX_02

APPENDIX_03

APPENDIX_04



MARKET COMPETITORS

ELECTRINE	COMPANY	Torqueedo	Evoy	Vision Marine Tech	Pure Watercraft
S. Korea	COUNTRY	Germany	Norway	Canada	USA
2010	EST.	2004	2018	2011	2011
115HP (40-115HP)	OUTBOARD	80HP	120HP only (Not able to deliver yet)	180HP only (Not able to deliver yet)	50HP only (Not able to deliver yet)
33.8kW (Extendable)	BATT SIZE	55kW (BMW i3 Pack)	63kW (No specific information available)	63kWh (No specific information available)	8.85kWh (Extendable up to 2 packs)
\$75,000	MSRP	\$61,000	\$74,800 (Pre-order Stage)	\$78,900 (Pre-order Stage)	\$16,500 (Pre-order Stage)
NON-COMMERCIAL USE : 3 YEARS BATTERY : 10 YEARS	WARRANTY	NON-COMMERCIAL USE : 2 YEARS BATTERY : 9 YEARS	No Information	No Information	NON-COMMERCIAL USE : 2 YEARS BATTERY : No Info
Manufactured since 2016	REMARKS	Accuired by German company in 2017 (100M Euro)	Securing 12.5M Euros of the investment since 2019	Went public in 2020	25% stake aaccuired by GM in 2021 (150M USD)

APPENDIX_01

APPENDIX_02

APPENDIX_03

APPENDIX_04

" YOU KEEP ENJOYING THE RIDE WE TAKE CARE OF THE REST "

Your concern for our environment is important to us as well.
However, we do not want you to compromise your fun with environmental concern.
Please leave those worries to us.
Please feel free to express your love for the enjoyment of your boating experience.
We make sure we do our job so the environment is better for now and the future.

YOUR RIDE FINALLY MEETS THE FUTURE.

