



## THE SAFE & POWERFUL CHOICE

ARIES 50 – the perfect electric drive system  
with safe-to-touch 48 volt technology.



THE WORLD'S MOST  
POWERFUL  
**48 V**  
ELECTRIC DRIVE  
SAFE-TO-TOUCH

## NEW: ARIES R50 L/XL outboard motor



**50 kW**

Nominal mechanical power

**120 kg**

Weight (without supply lines)

**48 v**

Supply voltage

**1,767 rpm**

Propeller shaft speed



## The advantages of the ARIES low-voltage system: Safer, smarter, and more efficient

Our 48 V high performance system sets a new standard for reliability, ease of maintenance and plug & play installation.

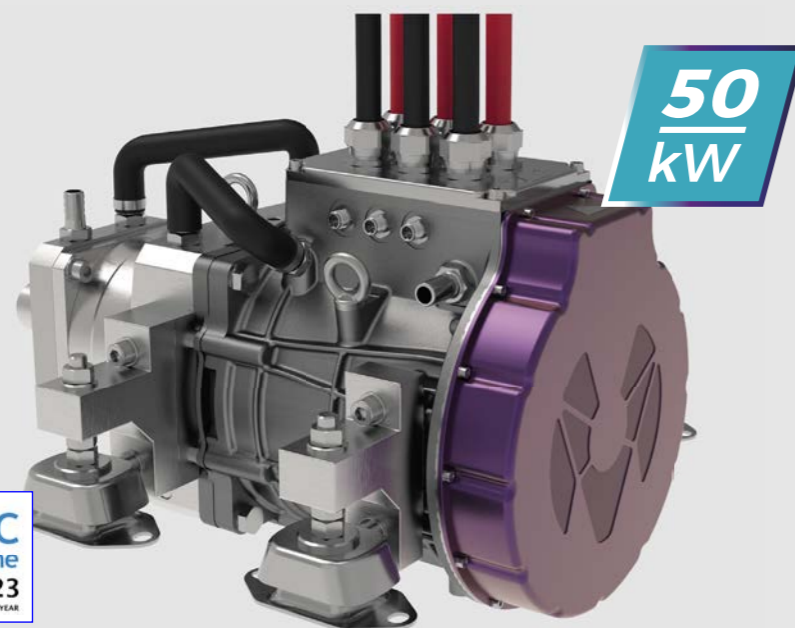
MOLABO's 48 V concept stands out from conventional electric drives in many ways. Normally, powerful electric drive systems are operated at voltages of up to 800 volts in order to keep up with combustion engines in terms of acceleration and comfort.

With the ARIES 50 electric drive developed by MOLABO, high performance can now be achieved for the first time ever with touch-safe voltages of 48 volts.

The low-voltage system provides the safe-to-touch technology to install without risk, enabling easy and quick integration. In contrast, high-voltage systems are potentially life-threatening without safety precautions and training.

- No high-voltage safety measures
- Simple plug & play installation
- Modular battery capacity
- High efficiency due to low-voltage components
- Patented Intelligent Stator Cage Technology (ISCAD)
- Integrated controller
- Everything from one source

## ARIES i50 inboard motor



**50 kW**

Nominal mechanical power

**44 kg**

Weight of motor incl. controller

**48 v**

Supply voltage

**1,087 rpm**

Shaft speed

electric  
& hybrid marine  
AWARDS 2023  
NEW PROPULSION TECHNOLOGY OF THE YEAR

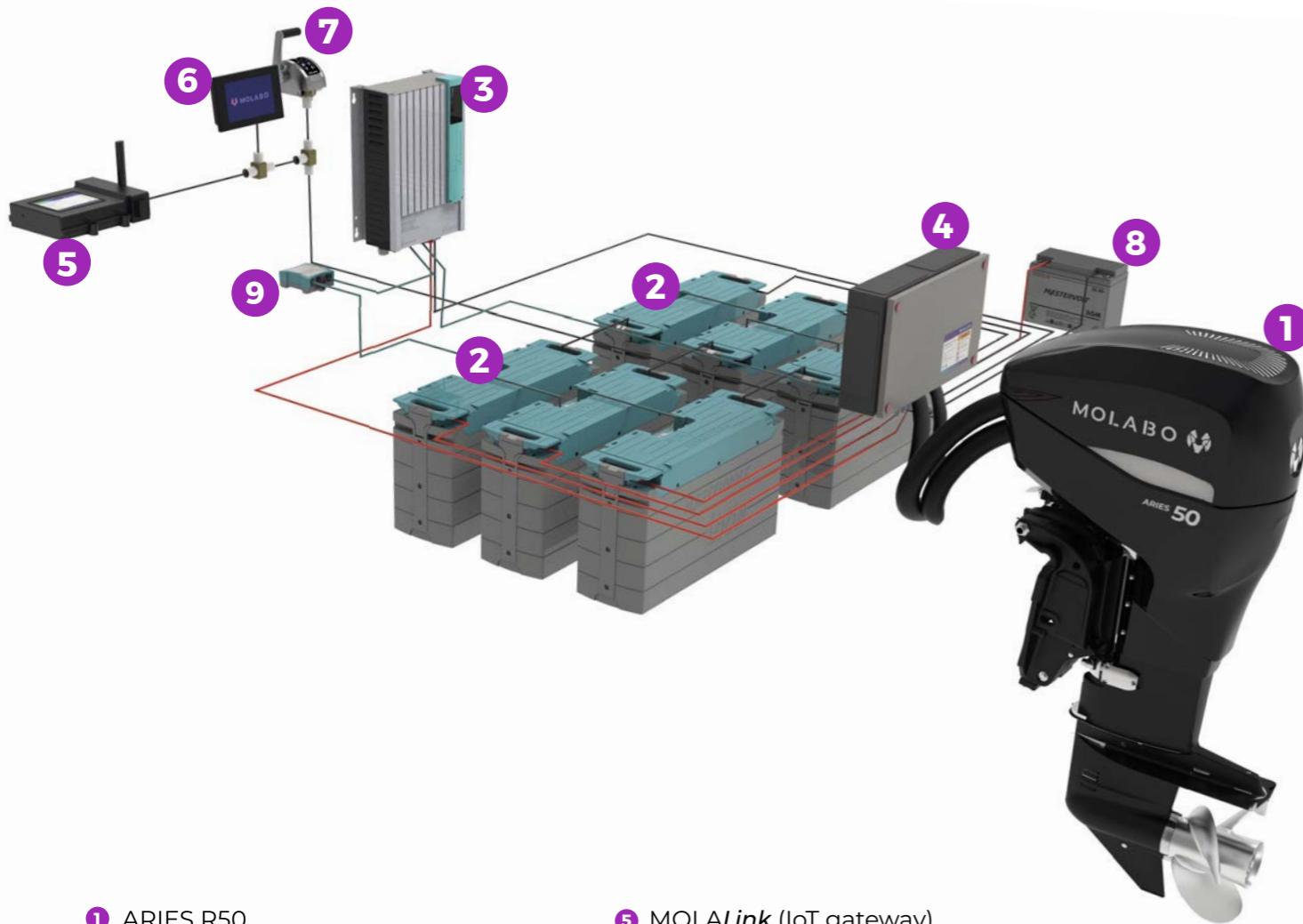
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**48 V**  
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## NEW: ARIES R50 L/XL outboard motor

The perfect propulsion solution for recreational boats and work boats up to 8m (26 ft) as a single installation, also available for larger boats as a twin installation.

Now ARIES 50 is also available as an outboard for our modular plug & play complete system. All components are perfectly matched, user-friendly, and meet the latest safety standards. Available with 36, 48 or 60 kWh LFP battery bank.

MADE IN  GERMANY



- 1 ARIES R50 electric outboard 50 kW
- 2 MASTERVOLT® LFP battery bank, plug & play, modular
- 3 MASTERVOLT® charger, plug & play, modular
- 4 MOLACONnect (DC distribution)
- 5 MOLALink (IoT gateway)
- 6 Display
- 7 Throttle: side-mount or top-mount
- 8 12 V battery (not included in the scope of delivery)
- 9 MASTERVOLT® MasterBus CAN gateway

## Specifications ARIES R50



Motor type	PM-assisted synchronous reluctance motor
Mech. rated power	50 kW
Supply voltage	48 V (44 V – 54 V full operation)
Max. voltage	58 V
Logic supply voltage	12 V
Shaft length	L: 20" / 51 cm XL: 25" / 63,5 cm
Dimensions (L x W x H)	L: 78 x 37 x 144,7 cm XL: 78 x 37 x 157,2 cm
Propeller standard	13 splines, (4 1/2" gear case) evinrude/Johnson/selva 40-140 hp
Propeller shaft torque	270 Nm
Propeller shaft speed	1,767 – 2,640 rpm
Weight (without supply lines)	L: 120 kg XL: 126 kg
Trim / Tilt system	Hydraulic
Max. trim angle	-4° – 12°
Max. tilting angle	12° – 65°
Max. steering angle	±28°
Water cooling	Dual-circuit cooling, max. 35° C input temperature
External cooling circuit	Electric pump
Communication	CAN
Max. drive efficiency	95 % (motor: 97 %, inverter: 98 %)
Protection class	IP65

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## Range tables ARIES 50

### Range ARIES 50 electric drive with 36 kWh LFP battery bank (6 x 6 kWh modules)\*\*

	Speed in knots (km/h)	Running time in hh:mm	Range in nm (km)
<b>Eco</b>	6 (11.1)	07:15	up to 43.5 (80.6)
<b>Cruise</b>	13.5 (25)	01:20	up to 18.1 (33.5)
<b>Full Speed</b>	24.5 (45.4)	00:30	up to 12.6 (23.4)

\*\* Measured on motorboat, length: 7.10 m, weight approx. 1,150 kg. Depending on boat model, load, propeller and local conditions; speed and range information without guarantee.

### Range ARIES 50 electric drive with 48 kWh LFP battery bank (8 x 6 kWh modules)\*\*

	Speed in knots (km/h)	Running time in hh:mm	Range in nm (km)
<b>Eco</b>	5.8 (10.7)	09:40	up to 55.9 (103.6)
<b>Cruise</b>	13.1 (24.2)	01:47	up to 23.3 (43.2)
<b>Full Speed</b>	23.7 (43.8)	00:41	up to 16.2 (30.1)


\*\* Measured on motorboat, length: 7.10 m, weight approx. 1,244 kg. Depending on boat model, load, propeller and local conditions; speed and range information without guarantee.


### Range ARIES 50 electric drive with 60 kWh LFP battery bank (10 x 6 kWh modules)\*\*


	Speed in knots (km/h)	Running time in hh:mm	Range in nm (km)
<b>Eco</b>	5.6 (10.3)	12:06	up to 67.3 (124.6)
<b>Cruise</b>	12.6 (23.4)	2:13	up to 28.2 (52.2)
<b>Full Speed</b>	22.7 (42.1)	0:51	up to 19.5 (36.1)

\*\* Measured on motorboat, length: 7.10 m, weight approx. 1,344 kg. Depending on boat model, load, propeller and local conditions; speed and range information without guarantee.

### Shortest charging time 20 - 80 % with three chargers of 3 kW each\*

 36 kWh battery bank in 2.2 hours

 48 kWh battery bank in 2.9 hours

 60 kWh battery bank in 3.7 hours

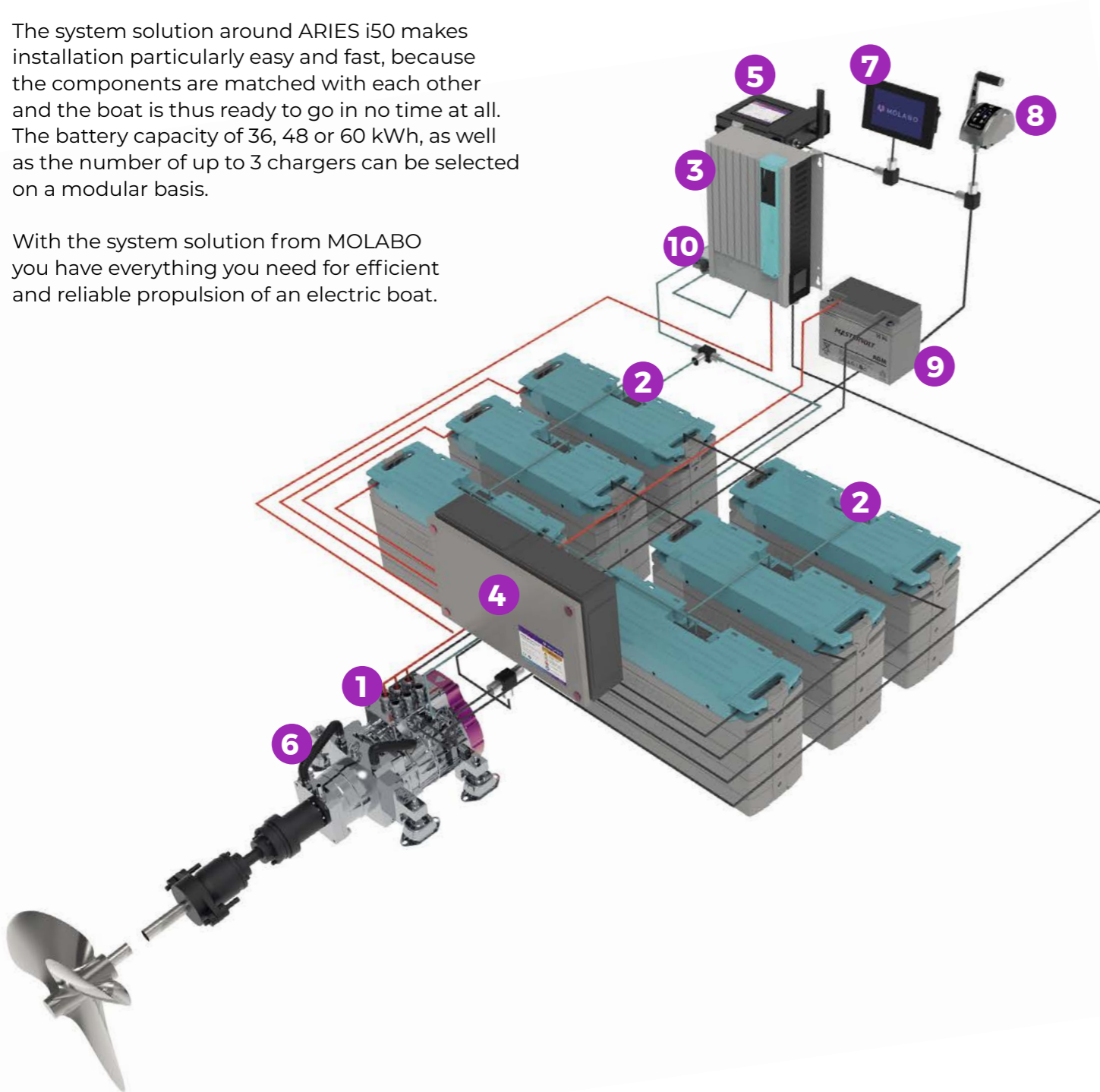
\* Calculation of the shortest charging time refers to the charging process of 80 % of the nominal capacity.

# ARIES i50 is the heart of a SYSTEM SOLUTION

For fast planing with motorboats up to 12 m (40 ft) and displacement sailing with sailboats up to 15 m (50 ft) or 12 t.

The system solution around ARIES i50 makes installation particularly easy and fast, because the components are matched with each other and the boat is thus ready to go in no time at all. The battery capacity of 36, 48 or 60 kWh, as well as the number of up to 3 chargers can be selected on a modular basis.

With the system solution from MOLABO you have everything you need for efficient and reliable propulsion of an electric boat.

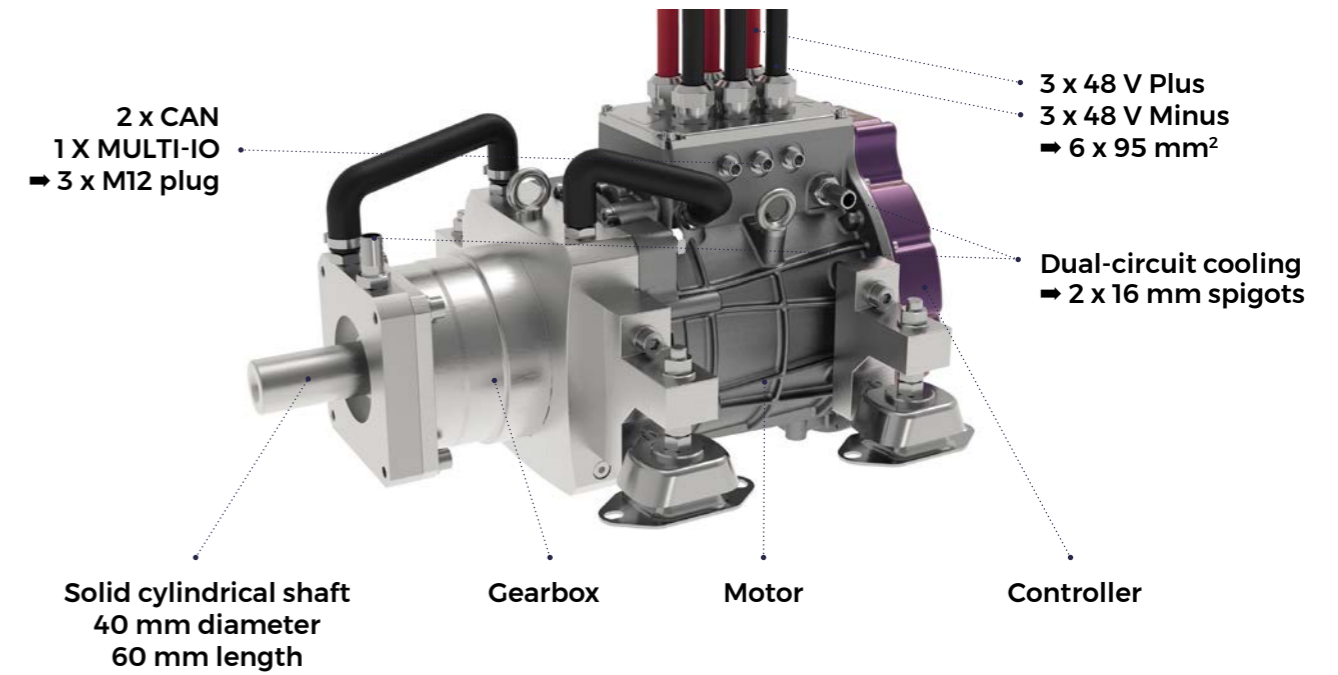


- 1 ARIES i50 electric inboard 50 kW
- 2 MASTERVOLT® LFP battery bank, plug & play, modular
- 3 MASTERVOLT® charger, plug & play, modular
- 4 MOLACONNECT (DC distribution)
- 5 MOLALink (IoT gateway)
- 6 Planetary gear (4:1)
- 7 Display
- 8 Throttle: side-mount or top-mount
- 9 12 V battery (not included in the scope of delivery)
- 10 MASTERVOLT® MasterBus CAN gateway

# ARIES i50 inboard motor

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## Connections ARIES i50



MADE IN GERMANY

## Specifications ARIES i50

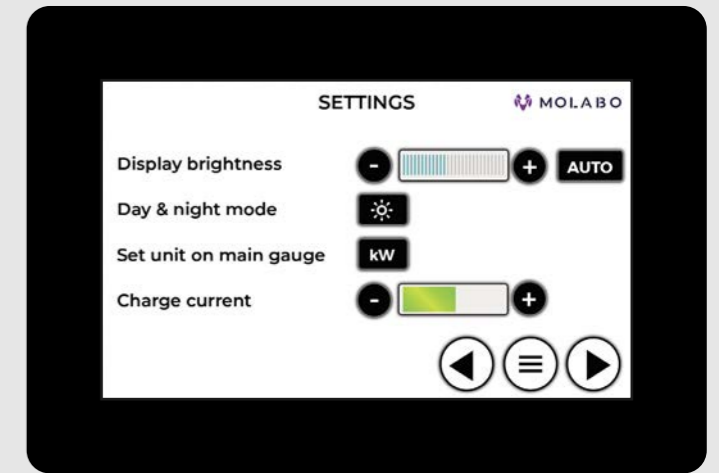
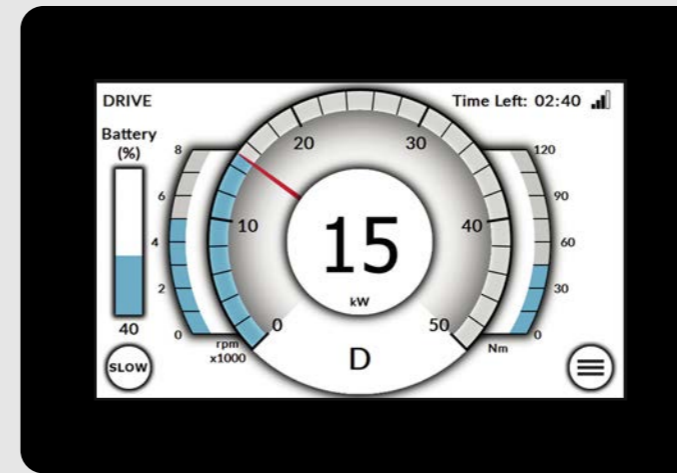
Nominal mechanical power	50 kW
Supply voltage	48 V (44 V – 54 V full operation)
Max. voltage	58 V
Logic supply voltage	12 V
Weight motor incl. controller	44 kg
Weight gearbox 4:1	15 kg
Motor speed	4,350 – 6,500 rpm
Shaft speed with gear 4:1	1,087 – 1,625 rpm
Dimension motor incl. controller	Ø 254 mm; L: 265.5 mm
Dimension with gear 4:1	Ø 254 mm; L: 457.5 mm
Motor type	PM-assisted synchronous reluctance motor
Communication	CAN
Protection class	IP67
Max. drive efficiency	95 % (motor: 97 %, inverter: 98 %)
Water cooling	Dual-circuit cooling, max. 35 °C flow temperature, 8 l/min

# ARIES 50

THE  
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CHOICE



Boat: Frauscher / 650 Alassio



## Specifications system components

### MASTERVOLT® LFP Battery MLI Ultra 24/6000

- Plug & play - MOLABO preconfigured
- Long service life and maximum safety
- 3,500 cycles, 80% DOD
- Battery Management System (BMS)
- LiFePO4 chemistry
- 2.5-C discharge rate
- Parallel connection of up to 5 x 2 modules
- MasterBus communication interface
- Weight 46,7 kg (1 x 6 kW module)
- Protection class IP65
- Global service

### MASTERVOLT® Mass 48/50 charger

- Plug & play
- Up to three chargers connected in parallel
- Charging power 3 kW
- Nominal output voltage 48 V
- Total charging current 50 A at 57 V
- Nominal input voltage 230 V (180-265 V), 50/60 Hz
- Weight 7.7 kg
- Protection class IP23

### MasterBus CANOpen interface gateway

- 2-way communication
- Protection class IP23

### MOLACONNECT-Box (DC distribution)

- Plug & play
- Pre-assembled screw points for e.g. 12 V chargers and fuses
- Clamp connection e.g. for key switch, light and emergency stop
- 48 V DC distribution, charging and discharging

- Soft start / pre-charge of the capacitors
- Thermal management (independent control of the water pumps)
- Interface MOLABus to MasterBus
- Dimension 500 x 300 x 120 mm
- Weight 15 kg
- Protection class IP23

### MOLALink (IoT-Modul)

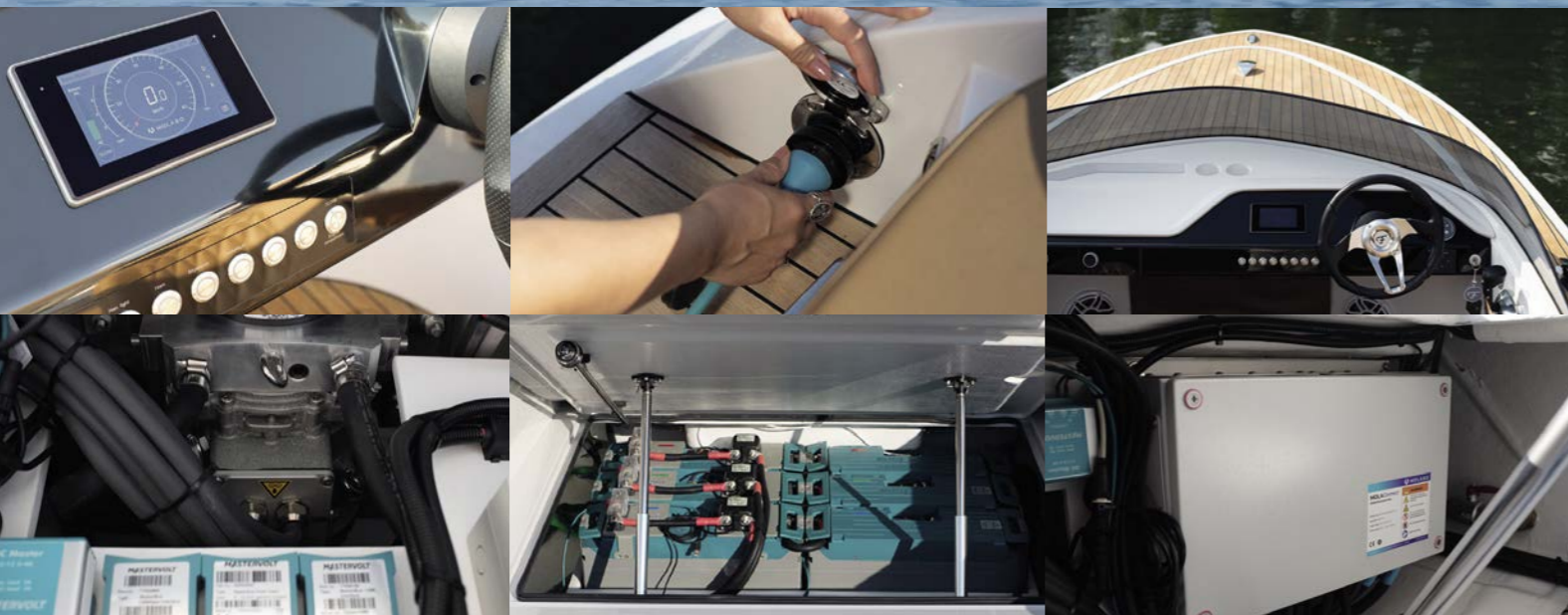
- Integrated SIM card
- Remote system configuration
- Remote error and system analysis
- Remote software updates
- Protection class IP67

### 7" TFT graphic display

- LED backlight
- Automatic brightness control
- Capacitive touch screen
- MOLABus
- Protection class IP68

### Throttle

- Electronic throttle available as
  - Top mount single
  - Top mount twin
  - Side mount starboard, center console
  - Side mount starboard, cockpit
- CAN bus integrated
- CMD Select
- Harbour mode
- Protection class IP67



# MOLABO's groundbreaking ISCAD technology

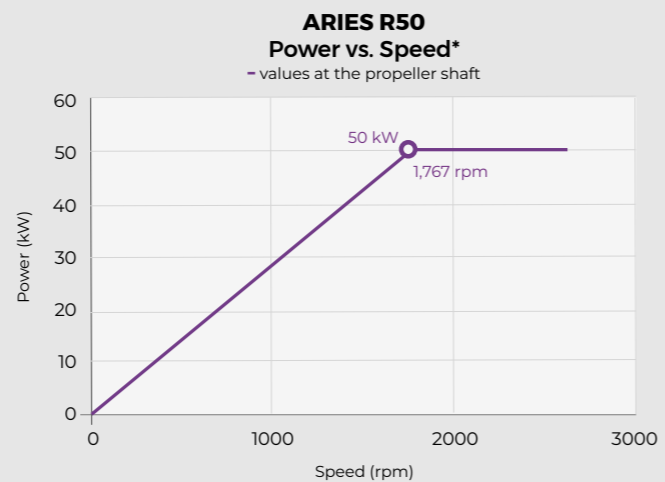
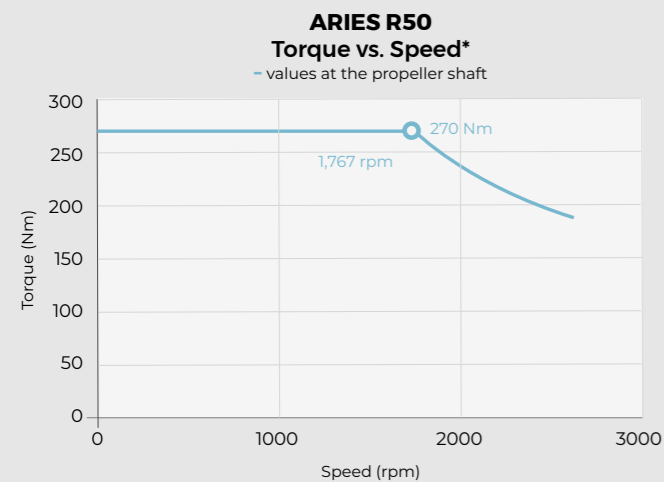
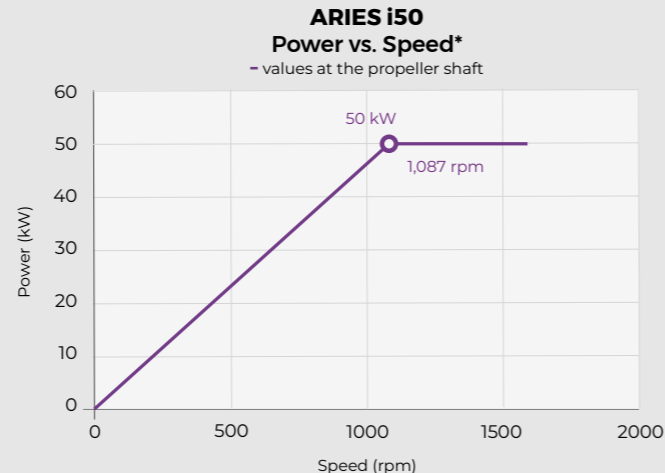
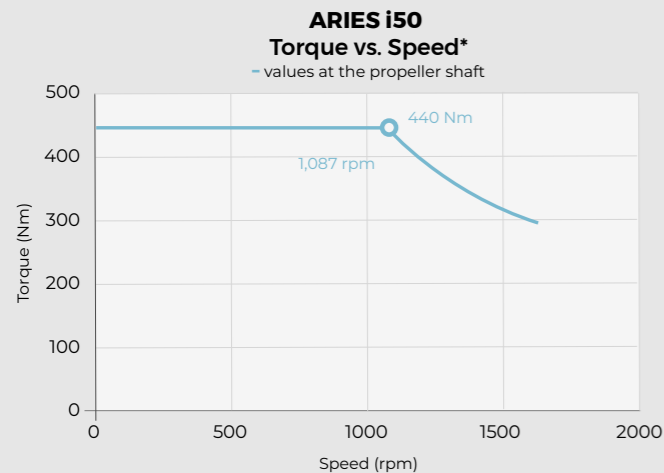


The core of the innovative Intelligent Stator Cage Drive (ISCAD) technology is the new stator of the electric motor. Instead of complicated windings, simple rods are used which form a kind of cage.

This makes the ISCAD technology a highly parallel system from the battery to the motor. Multiple bars make it possible to handle the high currents on the AC side, which are necessary for very high power at 48 V, to be distributed over many phases.

The ARIES 50, due to its low induced voltage, uses low-voltage semiconductors that operate more efficiently under partial load compared to high-voltage components, resulting in battery protection and reduced operating costs.

With the innovative stator cage technology, ARIES 50 offers a unique riding experience through powerful and silent acceleration.



\* Diagrams refer to engine with 4:1 reduction ratio

# The advantages in detail

Patented Intelligent Stator Cage Drive (ISCAD) technology enables high power at touch-safe voltages for the first time.



**Safe integration and maintenance**  
Integration and maintenance can be carried out without complex highvoltage safety measures.



**Space-saving installation**  
ARIES combines motor and controller in one unit – this saves installation space. Our 48 V batteries can be installed modularly in the smallest installation space.



**Plug & play**  
Pre-wired MOLACONnect Box enables quick and easy installation. Batteries are already MOLABO pre-configured and calibrated and therefore ready for immediate use. All components come from a single source and are optimally matched to each other.



**Efficiency**  
Low operating costs and long driving pleasure due to excellent system efficiency of > 95 %, because the low-voltage components use the energy of the batteries extremely efficiently.



**Modular battery capacity**  
Three LFP battery options with 36, 48, 60 kWh for optimum range. Choose between one or up to three 3 kW chargers connected in parallel.



**Quick installation**  
Due to the pre-cabling in the MOLACONnect Box, the installation of the system can be mastered within one day.



**Safe batteries**  
The batteries used are lithium iron phosphate batteries. They have a high energy density, long life and maximum safety.



**Reliable service**  
Error and system analysis as well as software updates remotely always and everywhere through IoT with integrated SIM Card. Extensive service Network.

## Why e-mobility

Quiet, low-vibration system with minimal maintenance compared to fossil fuels. Emission-free, no CO<sub>2</sub> or oil in the water.



Boat: Helios Omega 6.5

# THE MOLABO MISSION

MOLABO's mission is to enable sustainable mobility worldwide with safe-to-touch low-voltage electric solutions.

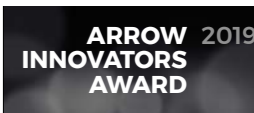
ARIES 50 is not just a product, but a representation of fundamental changes in the field of 50 kW boat propulsion.

ARIES 50 combines design excellence, innovation, and sustainability with a commitment to advancing electric mobility in the marine industry.

All mechanical components for the ARIES 50 are sourced in Europe to support local industry and ensure compliance with strict European standards, in terms of emissions and energy consumption. On average, for every 100 hours of operation, each ARIES 50 engine emits 1.4 tons less CO<sub>2</sub> than a combustion engine that consumes 6 liters of petrol per hour.

MOLABO not only offers a high-performance product, but is also committed to the environment.

MOLABO has won numerous awards for its groundbreaking innovations, including the Electric & Hybrid Marine Award, New Propulsion Technology of the Year 2023.





Boat: Earthling E-40 Power Hybrid Catamaran

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