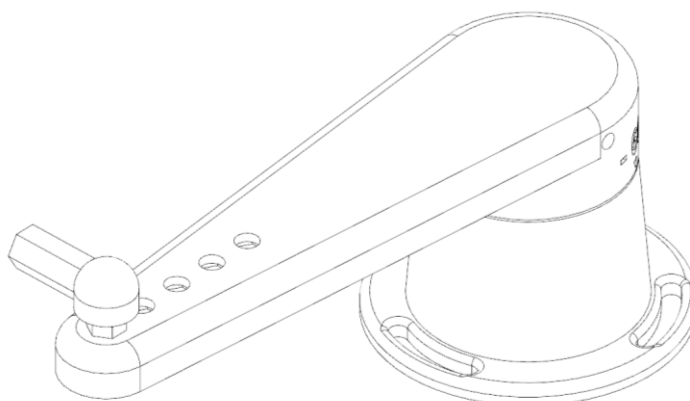




RUDDER SENSOR

Installation and user manual.



Acknowledgements

Thank you for purchasing a Jovial Marine helm sensor. We thank you for your trust and hope that this product will meet your expectations. Please let us know your feedback and wishes to contact@jovialmarine.com.

Jovial Marine is a family company of sailors created for sailors. Our philosophy is to put an end to the prices charged in the world of yachting, while offering quality products.

Technical specifications

Angular amplitude:	-60° to +60°.
Resolution:	<1°
Sensor Type:	5K Ω potentiometer (+/-10%)
Use and storage temperature:	0°C to +50°C. Prolonged exposure to UV rays may cause the product to deteriorate.
Product Weight:	85 grams (excluding cable)
Ingress protection	IP44
Case material	PETG, made in FDM 3D printing

Product entirely designed, manufactured and assembled in France.

Compatibility:

This product is compatible with all Raymarine/Raytheon autopilot controllers usually equipped with an "M81105" type steering sensor.

Example of compatible units:

- Nautinect Controller

- Raymarine **Evolution** EV-1 pilots (ACU-100, ACU-200, ACU-300, ACU-400)
- Raymarine **Smartpilot** pilots (S1, S2, S3, S3G)
- But also older generations **of Raytheon** (e.g. Raytheon type100). Please contact us for more information.
- Garmin drivers, including GHP Reactor. Contact us for other models.

Careful! This product is not suitable for autopilots using hall effect steering sensors (e.g. NKE, B&G...). Do not attempt to make a connection in this case. You risk damaging your on-board equipment.



Safety instructions and precautions for use



Danger: Keep a close watch

This product does not exempt you from a careful watch when sailing. Keep a close eye on the situation, which allows you to react as situations develop. To momentarily relax his watch would put you, your ship, and others in serious danger.

Danger: Ensure safe navigation

This product has been exclusively designed as an aid to navigation and is in no way a substitute for the sailor's experience and seamanship. The master is responsible for operating in accordance with the basic rules of prudence.

Hazard: Fire hazards

This equipment is NOT approved for installation in an explosive or flammable atmosphere. Do not install this equipment in hazardous and/or flammable atmospheres, such as an engine compartment or near fuel tanks.

Hazard: Power cut off

Check that the power supply to the ship, and in particular to the pilot, is cut off before starting to connect or disconnect this product.

Cleaning the product:

When cleaning:

- Turn off the device.
- Rinse gently with cold fresh water.
- Do not use abrasives, acids, ammonia, solvents, or other chemical cleaners.
- Do not use a pressurized jet.

Product Disposal

Dispose of this product in accordance with the WEEE Directive. The Electrical and Electronic Equipment (WEEE) Disposal Directive makes it mandatory to recycle discarded electrical and electronic equipment.



Connecting to other equipment:

Caution: This product is not an official product of the trademarks of Raymarine, Raytheon, Garmin, B&G, NKE or any other marine OEM brand. We cannot be held responsible for any possible loss of warranty or damage resulting from the connection of this product to a third-party device.



Water Ingress

Although this product is drip resistant to IP44 standard, exposure of the product to the spray of a pressure washer may cause water ingress with foreseeable consequential damage to system operation. This type of damage is not covered by the warranty.

IMO and SOLAS

The device described in this manual is intended for recreational boating and professional applications on vessels not subject to the international regulations applicable to maritime transport, issued by the IMO (International Maritime Organization) and by the SOLAS (Safety of Life at Sea) regulations.

Summary of the Guarantees:

The Jovial Marine rudder sensor described in this manual has a two-year manufacturer's warranty from the date of purchase (invoice as proof). This warranty covers exclusively defects of conformity or construction defects affecting the normal operation of the device, provided that the installation, use and maintenance have been carried out in accordance with the technical specifications.

The warranty does not include wear parts, consumables, damage related to improper installation, improper use, lack of maintenance, unauthorized modification, or the action of external elements. It does not cover transport and labour costs, nor indirect damage such as business interruption, downtime or damage to other equipment.

Any request for coverage must be sent in writing to contact@jovialmarine.com, accompanied by the information necessary for the analysis of the defect. A response will be provided to you within a maximum of one month. Do not return the product until a return authorization has been sent to you.

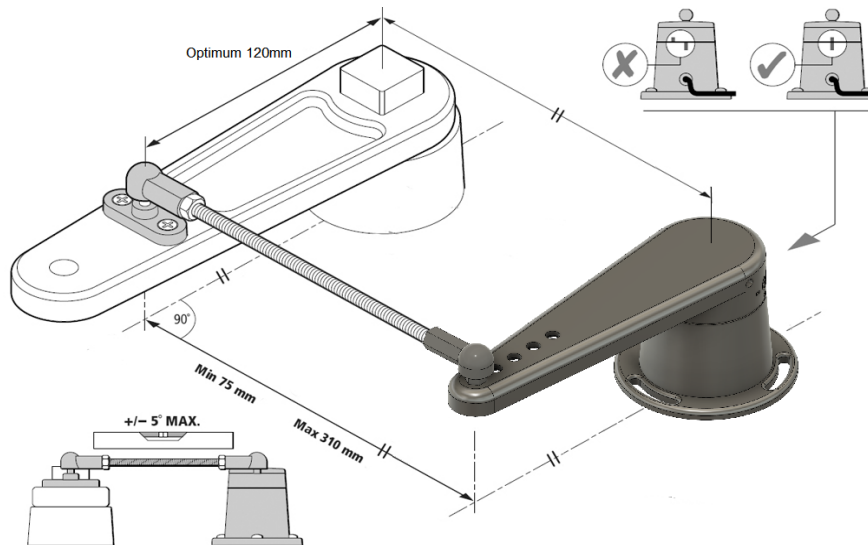
All applicable provisions, including limitations, exclusions and detailed procedures, can be found in our General Terms and Conditions of Sale, Article 12: <https://www.jovialmarine.com/cgv>



Installation instructions.

1.1 Mounting:

Center the rudder as well as the sensor. Attach the sensor according to the following recommendations:



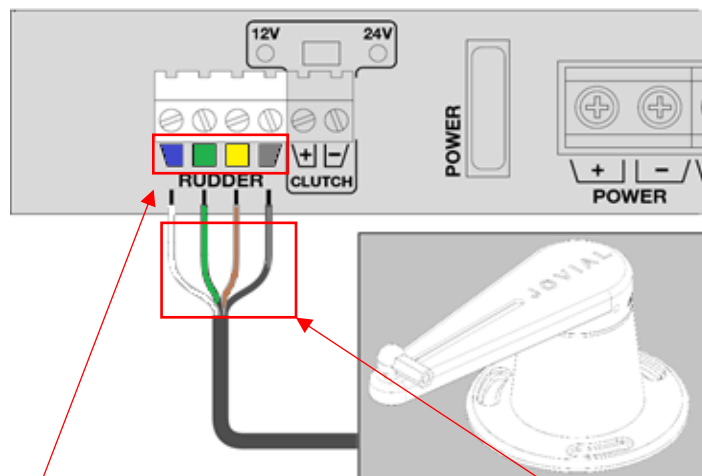
The sensor has a maximum travel (from -60° to $+60^\circ$) **that must not be exceeded under penalty of damage**. However, for maximum accuracy, care must be taken during installation to adjust the sensor so that it uses a sufficiently large stroke when moving the rudder. An adjustment ranging from -50° to $+50^\circ$ is optimal.

5 holes are available to change the thrust point of the connecting rod. Moving the tie rod closer to the axle increases the sensor travel.

1.2 Connection to the on-board electronics:

RAYMARINE

To connect to a RAYMARINE Controller: please respect the following color match (positions may vary depending on the driver model, only colors matter):



Colors on the Driver Terminal Block	Corresponding sensor cable color
Blue	White (broom/slider)
Green	Green (CW)
Yellow (or red depending on model)	Brown (CCW)
Grey (shielding)	Shielding



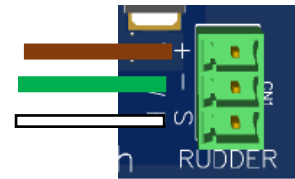
Nautinect

Brown → +

Green → -

White → S

Grey(shield) can be left unconnected or bin dit together with the GND



1.3 Calibration:

Before using the autopilot, it is **IMPERATIVE** to perform a dockside calibration of the autopilot. Following the connection of the sensor. Refer to the operator's manual for the Autopilot in question*. As an example, to access it on a Raymarine P70 control console, please perform the following procedure:

Menu. → Parameterization → Autopilot Calibration → Commissioning → Dockside Calibration Wizard.

- You will be asked to put the helm in the center, then to port and starboard. Following this calibration, the rudder angle indication given by the pilot's display must appear to be correct.

Once the dockside calibration has been successfully completed, you will be able to operate your pilot normally, with increased course keeping.

*On some pilot models, access to the dockside calibration menu requires the "installer" rights to be unlocked beforehand. Contact us in case of difficulties.

1.4 Troubleshooting:

If the direction of rotation of the rudder appears to be wrong:

Dockside calibration will perform the reversal automatically. Alternatively, reverse the connection of the green and brown wires and restart the calibration at the dock.

If calibration fails:

Make sure to mechanically center the sensor using the slotted holes on the base so that the rudder in the center best matches the 0° graduation.

If an error appears in navigation during extreme helm movements:

If the resistance between the Brown and White wires drops below 1.5KΩ while sailing, the controller can sometimes return an error. In this case, reduce the total sensor travel or add 1KΩ resistors on the green and brown wires.

Checking the value of the resistance:

The reading of the resistor is made of the disconnected sensor.

Sensor rotation angle	Value of the resistance between the Brown and the white wires
-60° (in a full position)	1.5KΩ (+/-10%)
0°	2.5KΩ (+/-10%)
+60° (in the other position at full throttle)	3.5KΩ (+/-10%)

The total value of the potentiometer is 5KΩ +/- 10% (between Brown and Green wire).

Replacing the potentiometer:

It is possible to replace the potentiometer when it has reached the end of its life. This results in non-linear behavior, especially in the center helm area, which can create erratic movements of the driver or trigger an error. Contact us for spare parts.



1.5 Dimensions

