

HUMPHREE®

SETUP MANUAL
FIN AND INTERCEPTOR
For software versions 6.0.x

HCS-5
HCS-5

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SAFETY INFORMATION

General

Please read the manual carefully before operating the Humphree system and pay extra attention to the following safety notices:



WARNING!

- Make sure to read all Warnings thoroughly as they contain important safety information. The Humphree system can cause serious injuries or death if not used properly.



IMPORTANT!

- The Important notices contain important instructions to avoid damage or malfunctions on the Humphree system or other property.

NOTE!

- A note contains information that facilitates the work when operating the Humphree system.

Interceptor Safety Information



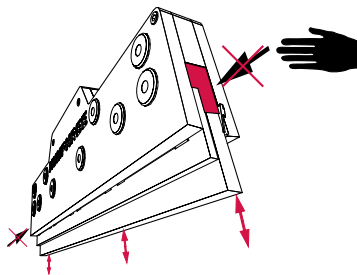
WARNING!

When installing the interceptors, make sure that there is no electrical current connected to them. Isolate shore electrical current to the engine block, battery charger, or accessories mounted on the engine.



WARNING!

Sharp edges, watch your fingers.



Fin Safety Information



WARNING!

Before docking, make sure the Humphree system is turned off by the main switch.



WARNING!

Before installation or service, the electrical power to the servo units with dedicated power supply must be switched off.



WARNING!

Fins must be in neutral position before the boat is lifted out of the water. The lifting device and/or struts must be placed in such a way that the fins are not damaged. To create a safe workplace in the area around the fins, it is recommended to have an enclosed area of at least 1.5 x fin length 360° around the fin.



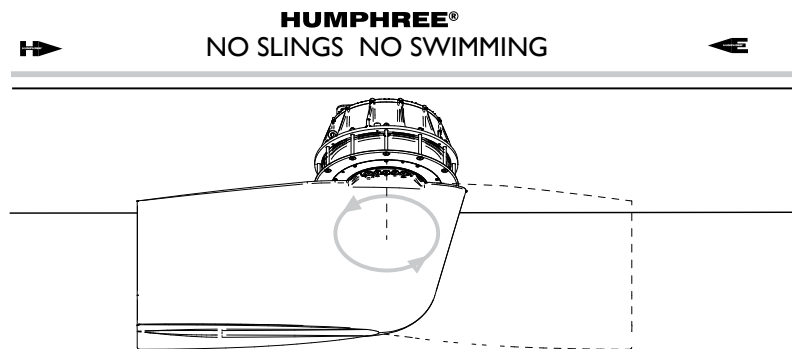
WARNING!

There is a risk of being squeezed between the fin and the hull when working in the area of the fin. Work with caution in the area around the fins.



WARNING!

The fins are rotating when enabled in ZERO SPEED STABILIZATION mode. Swimmers must stay away from the fins due to the risk of injury. For safety around the vessel, make sure the installer has applied appropriate warning signs prominently on the hull above the waterline above each fin.



IMPORTANT!

To avoid servo damage and ensure optimal performance, the fins system must be integrated with a rudder signal. For more information, follow the Rudder signal setup.

IMPORTANT NOTICES

- The following manual is provided for Humphree service workshops, ship-builders, machine manufacturers, and other authorized workshops that have personnel with qualified professional training. The installation instructions are only for professionals. If the installation instructions are not followed or if the work is carried out by non-professional personnel, Humphree will not assume any liability for damage that may incur to materials or personal injury.
- The information in this document is the property of Humphree and may not be copied or communicated to a third party, or used for any purpose other than that for which it is supplied, without the express written consent of Humphree. This information is given in good faith based upon the latest information available to Humphree, no warranty or representation is given concerning such information, which must not be taken as establishing any contractual or other commitment binding upon Humphree or any of its subsidiary or associated companies.
- If the manual is lost or worn, see www.humphree.com or contact your local Humphree dealer.
- The contents of the manual and equipment specifications are subject to change without notice.
- All illustrations in the manual are schematically correct but may not be exact copies of the corresponding equipment on your vessel.
- The screens shown in the manual may not match in detail the screens you see on the display. The screens you see depends on software versions, system configuration and system settings.
- Humphree will assume no responsibility for damage caused by improper use or modification of the interceptor system parts, or claims of loss of profit by a third party.
- The interceptor system is protected by patent.
- Inspect the parts at arrival for damage occurred during transportation.

FUNCTIONS OVERVIEW

The following table lists all the available Humphree functions and the required features that must be set up before using the functions.

HUMPHREE FUNCTION	REQUIRED SETUP
AUTO TRIM	<ul style="list-style-type: none"> • RCU Orientation • Trim/List Angle • GPS
LIST & ROLL	<ul style="list-style-type: none"> • RCU Orientation • Trim/List Angle • GPS
COORDINATED TURN	<ul style="list-style-type: none"> • RCU Orientation • Trim/List Angle • GPS • Rudder Input Signal
PITCH CONTROL	<ul style="list-style-type: none"> • RCU Orientation • Trim/List Angle • GPS
INTERCEPTOR STEERING	<ul style="list-style-type: none"> • RCU Orientation • Trim/List Angle • GPS • Rudder Input Signal • Handshaking Signals
ZERO SPEED STABILIZATION	<ul style="list-style-type: none"> • RCU Orientation • Trim/List Angle • GPS
FISH HUNTING MODE	<ul style="list-style-type: none"> • RCU Orientation • Trim/List Angle • GPS
VESSEL MOTION MONITORING	<ul style="list-style-type: none"> • RCU Orientation • Trim/List Angle • GPS • Red and Yellow Impact Levels

REQUIRED SETUP

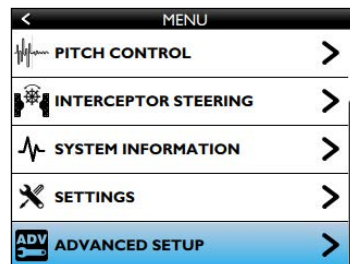
The following are required steps that must be done before using any of the Humphree functions:

1. Access to Advanced Setup (CP512 only)
2. RCU Orientation
3. Trim/List Angle Calibration
4. GPS Selection
5. Interceptor Calibration
6. Align Fins and Set Fin Zero Position

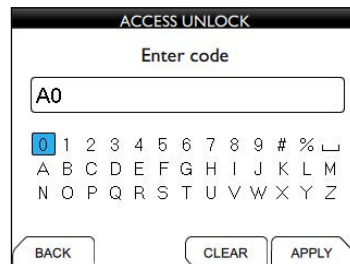
I. Access to Advanced Setup (CP512 Only)

On the CP512, some of the required setups for the Humphree functions need access to **ADVANCED SETUP**.

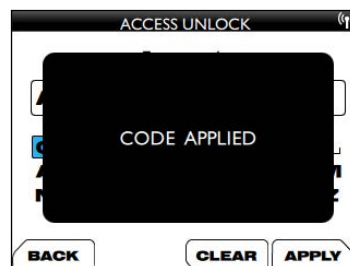
1. Go to:
 CP512 only: MAIN MENU/ADVANCED SETUP



2. CP512 only: Enter A0.



3. CP512 only: Press APPLY to proceed.



2. RCU Orientation

NOTE!

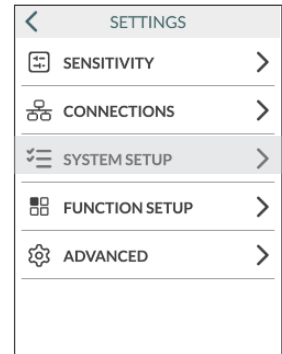
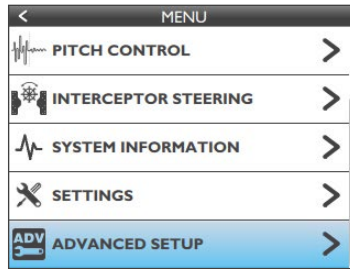
Incorrect RCU orientation will lead to sensor malfunctions in the Humphree system.

It is always RCU-I that must correspond to the RCU orientation in the control panel. The default orientation is 0 but the RCU-I can also be installed in a different orientation than default.

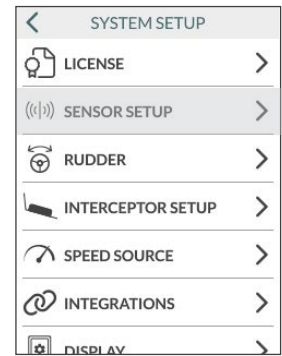
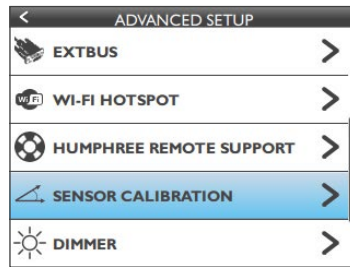
The following steps must be performed before using any of the Humphree functions:

1. Find the location of the RCU-I in the vessel. Make sure it is in eyesight when doing the following setup.

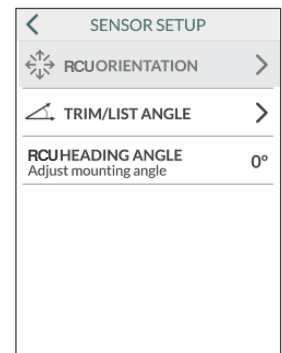
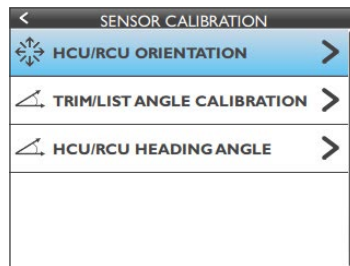
- Go to:
CP512: MAIN MENU/ADVANCED SETUP
LCP: MAIN MENU/SETTINGS/SYSTEM SETUP



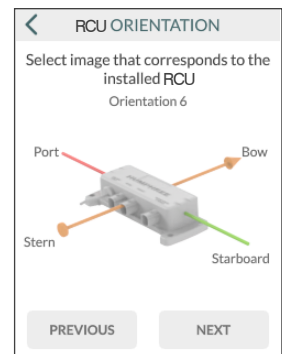
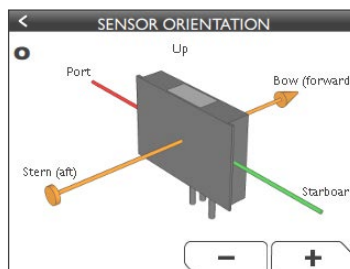
- Go to:
CP512: SENSOR CALIBRATION
LCP: SENSOR SETUP



- Go to:
CP512: RCU ORIENTATION
LCP: RCU ORIENTATION



- Press +/- (CP512) or tap PREVIOUS/NEXT (LCP) to adjust the image on the screen and make sure it corresponds to the physical RCU-I that is installed in the vessel.



- Wait for two minutes before proceeding with the required setup.

3. Trim/List Angle Calibration

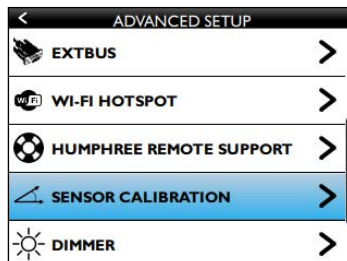
NOTE!

Incorrect calibration of trim/list angles will lead to malfunctions in the Humphree system.

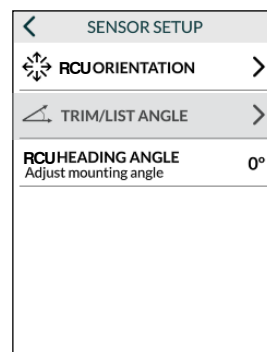
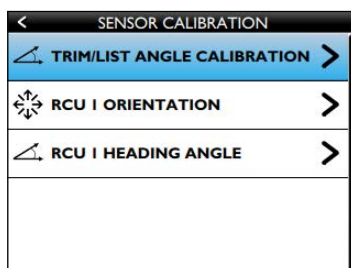
Make sure the vessel is at dock at zero speed and has 0° list before proceeding with the steps.

1. Load the vessel so that the vessel is on an even keel.

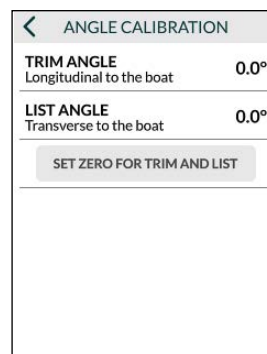
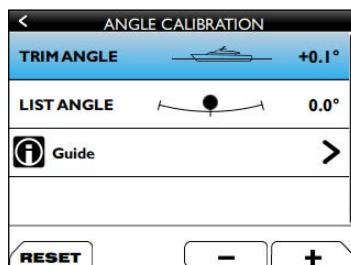
2. Go to:
 CP512: MAIN MENU/ADVANCED SETUP/
 SENSOR CALIBRATION
 LCP: MAIN MENU/SETTINGS/SYSTEM
 SETUP/SENSOR SETUP



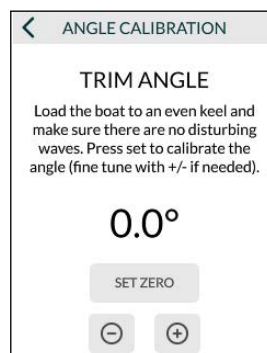
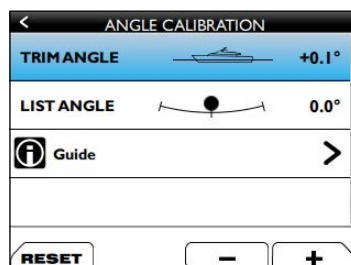
3. Go to:
 CP512: TRIM/LIST ANGLE CALIBRATION
 LCP: TRIM/LIST ANGLE



4. To set the TRIM and LIST angles to 0:
 CP512: Select TRIM ANGLE and press RESET.
 Select LIST ANGLE and press RESET.
 LCP: Tap SET ZERO FOR TRIM AND LIST



5. To fine tune the TRIM or LIST angles and individually set them to zero:
 CP512: Select TRIM ANGLE or LIST ANGLE and press the PLUS/MINUS function keys
 LCP: Tap TRIM ANGLE or LIST ANGLE and tap PLUS/MINUS



4. GPS Selection

There are several ways to setup a GPS that corresponds with the Humphree Control System (HCS):

- Humphree GPS (CP512 only)
- NMEA 2000
- EXTBUS

Humphree GPS (CP512 Only)

The Humphree GPS will function as soon as it is installed by cable to a CP512. Installation instructions for the Humphree GPS cable are found in the *Installation Manual*.

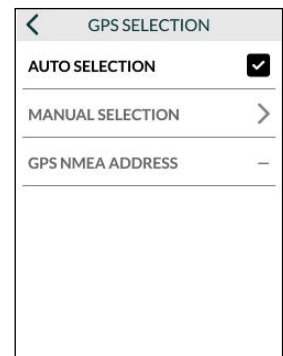
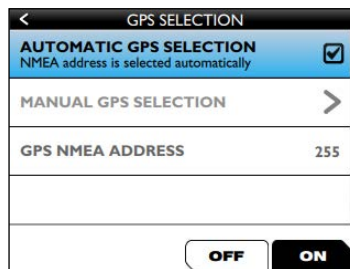
NMEA 2000

With NMEA 2000, selections of available sources for boat speed, are made. NMEA 2000 settings are found in:

CP512: MAIN MENU/SETTINGS/NMEA 2000 SETUP/
GPS SELECTION

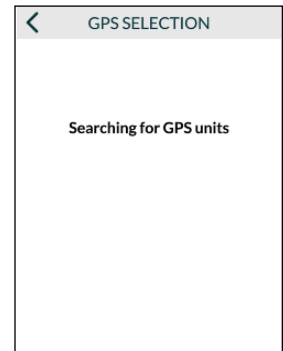
LCP: MAIN MENU/SETTINGS/SYSTEM SETUP/
SPEED SOURCE/GPS SELECTION

With AUTOMATIC GPS SELECTION (CP512) or AUTO SELECTION (LCP) ticked, the system automatically selects a GPS source. The automatic selection option is ticked by default.



If the automatic selection has picked a GPS that does not work properly:

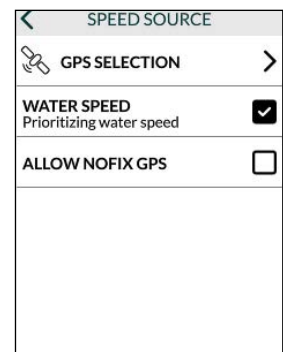
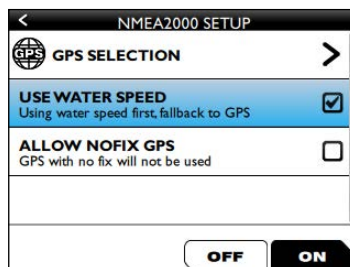
1. Note the address of the GPS unit to avoid selecting it in the manual selection procedure.
2. Untick the box:
CP512: AUTOMATIC GPS SELECTION
LCP: AUTO SELECTION
3. Go to:
CP512: MANUAL GPS SELECTION
LCP: MANUAL SELECTION.
4. The system searches for available GPS units and presents a list.
5. Select a GPS unit.
6. If no GPS units are found, check the electrical connections.



Water Speed

Tick the USE WATER SPEED (CP512) box or the WATER SPEED (LCP) box to use the water speed as primary speed source, with fallback to the GPS signal if the water speed sensor drops out.

As a default, the HCS-5 system uses GPS as the primary speed source, with fallback to water speed if the GPS signal drops out and a water speed sensor is available.



EXTBUS

If the use of other interfaces than the Humphree GPS or NMEA 2000 is required, GPS through EXTBUS is the solution. See the chapter *RUDDER INPUT SIGNAL* for further instructions.

5. Interceptor Calibration

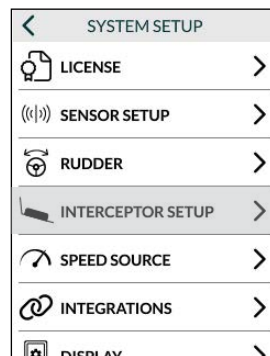
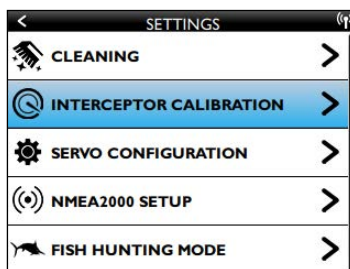
Depending on the system that is installed, the Humphree functions must be calibrated before usage.



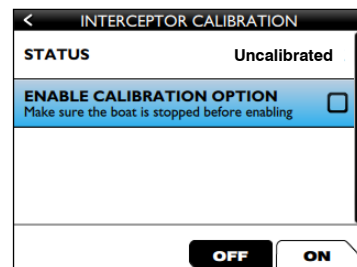
IMPORTANT!

The vessel must be at zero speed when performing a calibration.

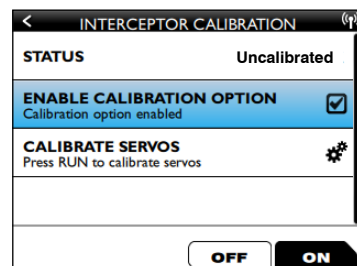
1. Go to:
 CP512: MAIN MENU/SETTINGS/
 INTERCEPTOR CALIBRATION
 LCP: MAIN MENU/SETTINGS/SYSTEM
 SETUP/INTERCEPTOR SETUP



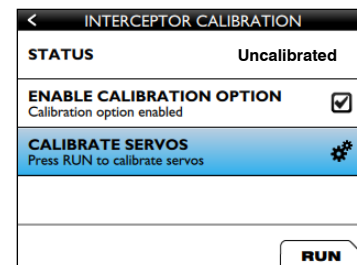
2. CP512 only: Tick the ENABLE CALIBRATION OPTION box.



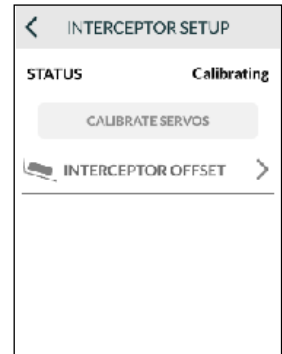
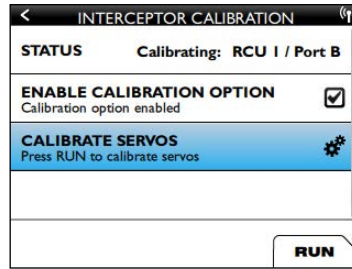
3. CP512 only: CALIBRATE SERVOS will be visible on the screen.



4. CP512 only: Go to CALIBRATE SERVOS.



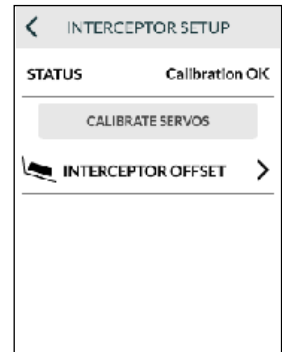
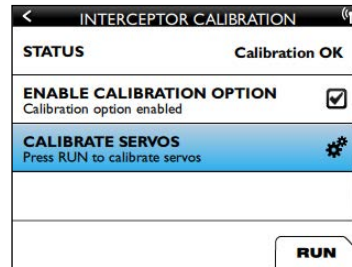
- To start the interceptor calibration:
 CP512: Press RUN
 LCP: Tap the CALIBRATE SERVOS button



- Wait for the STATUS to say Calibration OK.

NOTE!

If the calibration fails, the solution can be found in the alarm list. Go to MAIN MENU/SYSTEM INFORMATION/ALARMS (CP512) or MAIN MENU/SETTINGS/ADVANCED/ALARMS (LCP)..



6.Align Fins and Set Fin Zero Positions

NOTE!

- The vessel must be on land for the following instructions.
- It is recommended to be 2–3 people to perform the following steps smoothly.

Mark the Fins

The following steps must be performed on all fins:

1. Mark the trailing edge at a level similar to the image.



2. Measure the distance from the hull to the mark.



3. Mark the bow of the fin at the same height from the hull surface. Mark at the center of the bow.



- 4. Measure the distance between the trailing edge at the mark position and the keel center line.

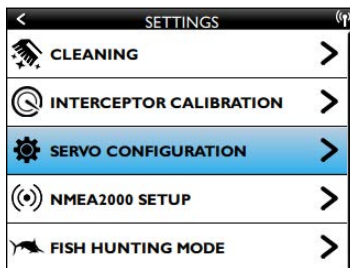


- 5. Measure the distance between the fin bow mark position and the keel center line.

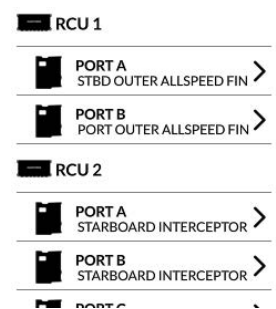
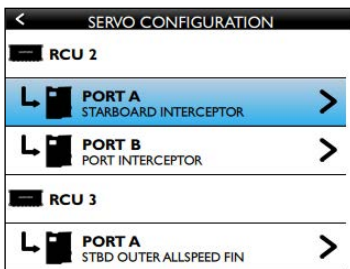


Set Fin Zero Position

- 6. Go to:
 CP512: MAIN MENU/SETTINGS
 /SERVO CONFIGURATION
 LCP: SYSTEM SETUP/
 SERVO CONFIGURATION



- 7. Select a servo unit in the list.



8. If there is a servo that the system does not recognize, the SERVO CONFIGURATION description field will say *Servo assignment mismatch*.
9. Press ASSIGN SERVO

NOTE!

As a safety precaution, the system will automatically assign fin limits to their current position. The serial number for the assigned servo will from now on be logged in the memory of the system.

10. Go to: SERVO CONFIGURATION and press ON
11. Go to: FIN ZERO POSITION
12. For this step, it is recommended to have one person at the control panel and two people that measure.

Always be cautious as the fin will rotate.

CP512: Use the function buttons, LCP: Use on screen buttons, to rotate the fin clockwise and counterclockwise until the two distances of the fin (bow and trailing edge) is equal within 0–5mm. Be as precise as possible.

Press SET ZERO to set the fin zero position.

13. A pop-up asking to remove fin limits is shown.

If the vessel is still on land, press NO.

Press YES to remove the fin limits.

NOTE!

Do not remove the fin limits until the vessel is placed in water.

14. Go to: SERVO CONFIGURATION and press OFF

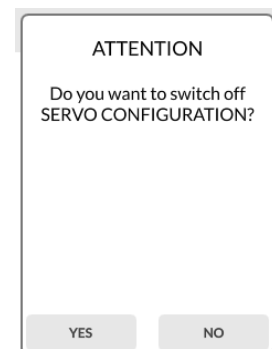
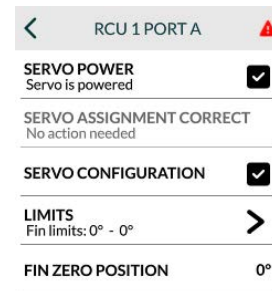
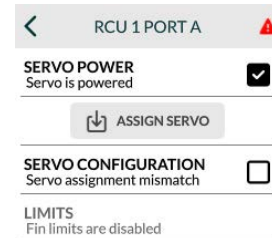
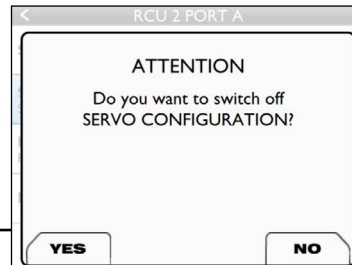
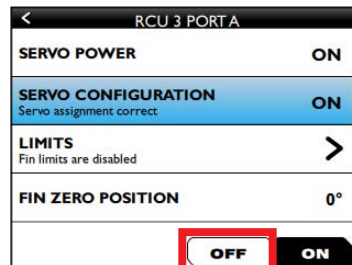
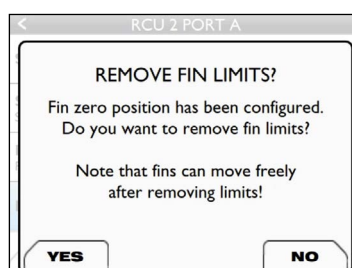
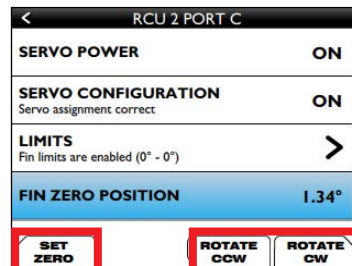
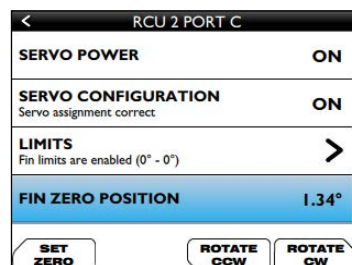
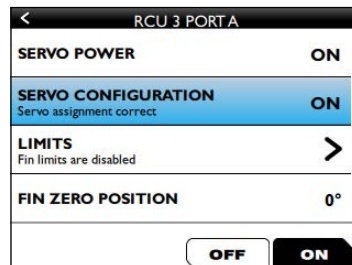
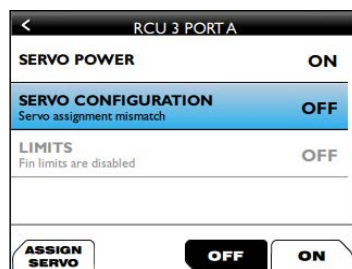
NOTE!

Turning off the servo configuration is mandatory. If the user tries to exit the servo configuration without turning it off, a pop-up asking to switch off the servo configuration is shown.

15. Repeat steps 1 to 14 for all fins.
16. Once all fins are done, the fin zero positions have been set.

NOTE!

The fin zero positions are permanently stored in the memory of the servo unit and will not be affected by loss of power supply.

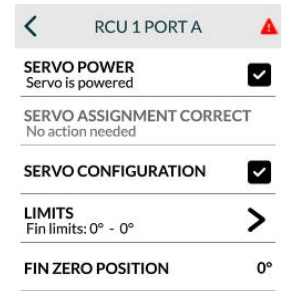
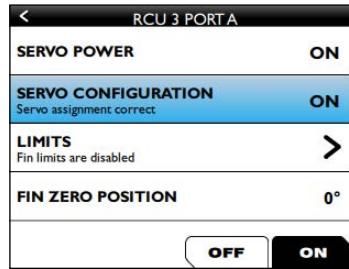


Fin Limits

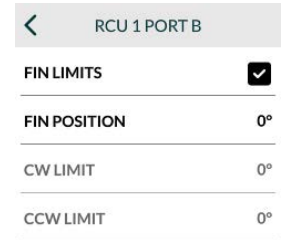
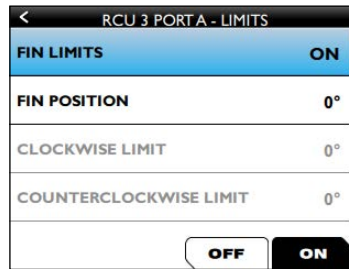
Fin limits are used when the hull of the vessel prevents the fin to move freely.

When the vessel is on land, it is recommended to have fin limits to prevent the fins from rotating freely.

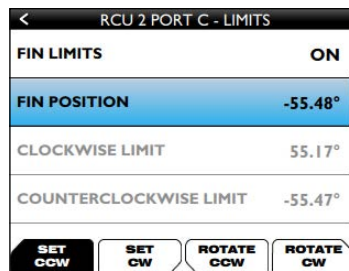
1. Go to: SERVO CONFIGURATION and press ON
2. Go to: LIMITS



3. Select FIN LIMITS and press ON



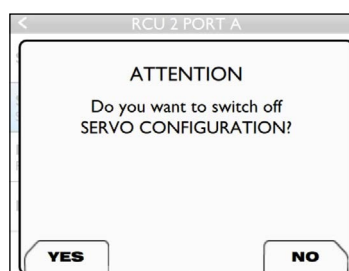
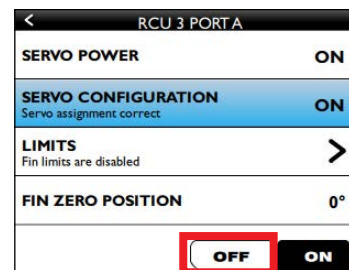
4. Use the ROTATE CCW function button to rotate the fin counter clockwise.
5. Press SET CCW to set the fin limit.
6. Use the ROTATE CW function button to rotate the fin clockwise.
7. Press SET CW to set the fin limit.



8. Go to: SERVO CONFIGURATION and press OFF

NOTE!

Turning off the servo configuration is mandatory. If the user tries to exit the servo configuration without turning it off, a pop-up asking to switch off the servo configuration is shown.



RUDDER INPUT SIGNAL

NOTE!

Calibration of rudder input signal is necessary for the following Humphree functions:

- Interceptor Steering
- Coordinated Turn
- **IMPORTANT!** Fin systems - Any function. Failure to calibrate voids warranty.

Install Rudder Input Sources

Table I is an overview of the different rudder input sources.

Electrical interface	Connection Position	Signal	Calibration needed	Other
VPI100	Control Panel	NMEA 0183	YES	
Rudder Angle Sender (Ampere)	RCU562	4-20mA	YES	
Rudder Angle Sender (Volt)	RCU562	0-5V	YES	
EXTBUS	Control Panel RCU562	RSA	YES	See Extbus Manual for signal info.
NMEA 2000 Drop Cable	Control Panel	NMEA 2000	YES	
SIMRAD RF25 & NMR501	RCU	NMEA 2000	YES	
EXTBUS	Control Panel RCU562	STC	NO	See Extbus Manual for signal info.

NMEA 2000

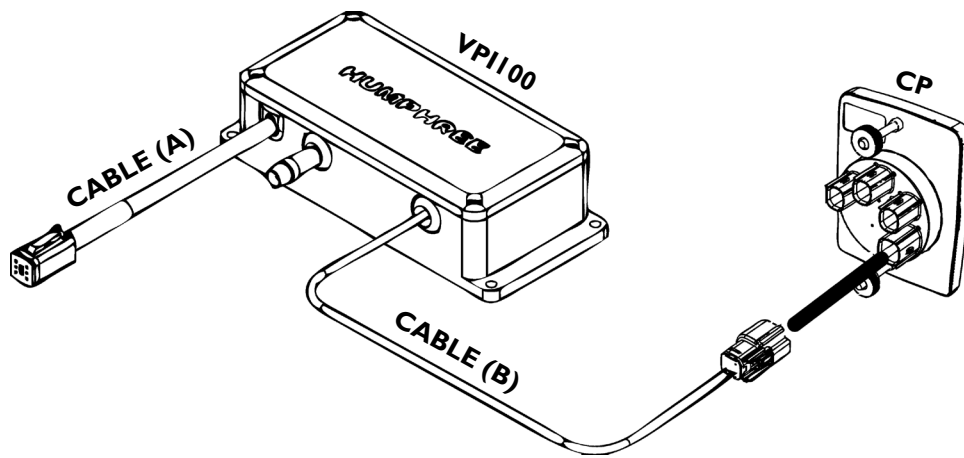
The NMEA 2000 Drop Cable is pre-fitted with the standardized NMEA 2000 connector and is compatible with a NMEA 2000 T-Connector or a Network Hub. The NMEA 2000 Drop Cable is part of the Main Control Panel Kit that is delivered with all Humphree systems.

Connect the NMEA 2000 Drop Cable to the Control Panel according to the image.

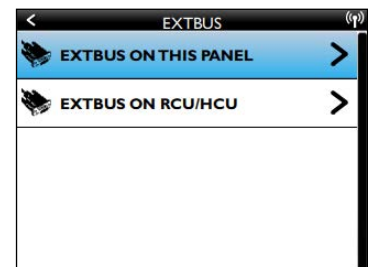


Volvo Penta Interface

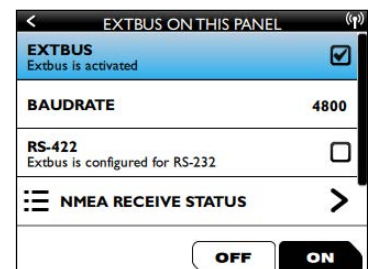
The Volvo Penta Interface (VPI100) is used for reading the rudder position from Volvo Penta engines. The VPI100 shall be installed close to the Humphree control panel to avoid long cable extensions. Mount the VPI100 with four M5 bolts or equivalent.



1. Fasten the VPI100 onto a stable bulkhead or equivalent, close to the control panel.
2. Connect CABLE (A) to the Volvo Penta Multilink HUB or the Volvo Penta Multilink Breakout Y-split Cable.
3. Connect CABLE (B) using MOLEX to the backside of the CP.
4. Perform a *Volvo Penta Auto Configuration*. See the *Volvo Penta Manuals*.
5. Go to:
CP512: MAIN MENU/ADVANCED SETUP/EXTBUS
6. Go to:
CP512: EXTBUS ON THIS PANEL



7. CP512: Set BAUDRATE of the bus to 4800.
8. CP512: Untick the RS-422 box.
9. Perform the steps in chapter *RUDDER INPUT SIGNAL*.



RS-232/RS-422

1. Determine the connection type between HCS-5 and the external system. HCS-5 supports RS-232 and RS-422.

NOTE!

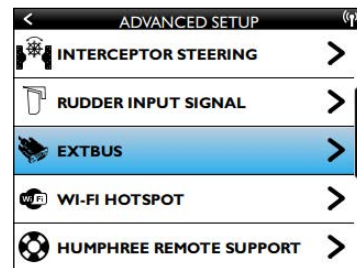
Only one input source can be connected.

- 2. Use one of the following to connect RS-232/RS-422 to HCS-5.
 - a. EXTBUS cable
 - b. Interface cable from a RCU

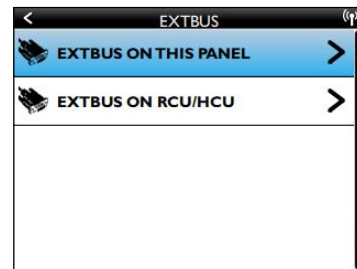
NOTE!

The interface cable from a RCU is only compatible with RS-422.

- 3. Go to:
CP512: MAIN MENU/ADVANCED SETUP/EXTBUS



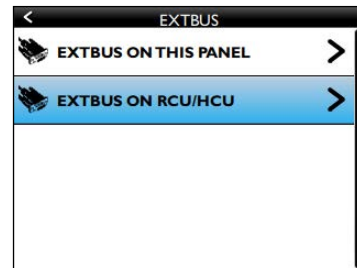
- 4. Go to:
CP512: EXTBUS ON THIS PANEL or EXTBUS ON RCU
- 5. Do the steps described under EXTBUS ON THIS PANEL or EXTBUS ON RCU.
- 6. Set up the external system and select a signal. The communication standard is NMEA 0183.
 - a. Rudder Sensor Angle (RSA)
 - b. Steering Control Signal (STC)
- 7. Make sure that the transmitting unit is sending the RSA or STC sentence.
- 8. If STC is selected, no rudder calibration is needed.



NOTE!

The signals for RSA are described in the *EXTBUS Manual*.

- 9. If STC is selected, perform the steps described in chapter *RUDDER INPUT SIGNAL*.

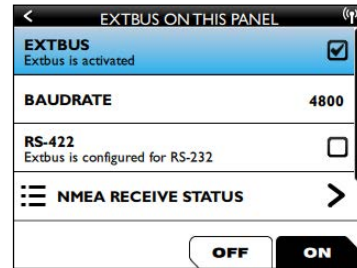


NOTE!

The signals for STC are described in the *EXTBUS Manual*.

EXTBUS ON THIS PANEL

- 1. CP512: Press ON to enable EXTBUS.
- 2. CP412: Set BAUDRATE. The default value is 4800 but it is possible to select 4800, 9600, 19200, 38400, 57600, or 115200.
- 3. CP512: RS-232 is the default setting, press ON to select RS-422.
- 4. Go to:
CP512: NMEA RECEIVE STATUS to make sure that there is NMEA traffic



5. Set up the external system and select a signal. The communication standard is NMEA 0183 on CP512.
 - a. Rudder Sensor Angle (RSA)
 - b. Steering Control Signal (STC)

NMEA RECEIVE STATUS	
RMC	1036 ms
VTG	NOT RECEIVING
RSA	107 ms
STC	107 ms
HSC	NOT RECEIVING

EXTBUS ON RCU

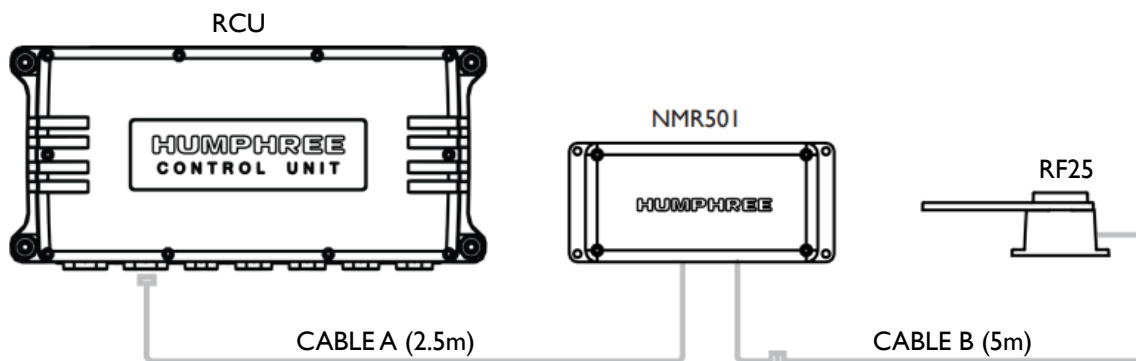
NOTE!

The RCU is only compatible with RS-422.

1. CP512: Press the PLUS or MINUS function keys to select BAUDRATE. The default value is 4800 but it is possible to select 4800, 9600, 19200, 38400, 57600, or 115200.

EXTBUS ON RCU/HCU	
RCU 1 Serial 1000282	EXTBUS OFF [Baudrate: 4800]
SET - +	

Simrad RF25 and NMR501



1. Mount the NMR501 with four screws onto a stable bulkhead.
2. Use CABLE A to connect NMR501 to the RCU.
 - a. Remove the termination plug in the RCU and replace it with CABLE A. The NMR501 has a termination built in.
3. Use CABLE B to connect RF25 to NMR501.

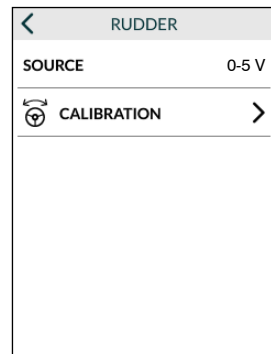
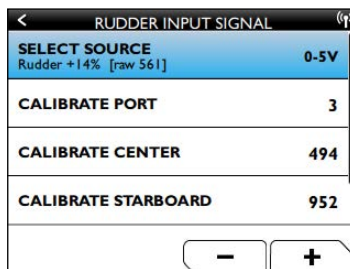
Analog 0–5V or 4–20mA Signal

As a safety precaution to reduce the risk of unwanted interceptor movements caused by a malfunctioning rudder position sensor, the Humphree Control System constantly performs a Signal Range Check (SRC) of the sensor value.

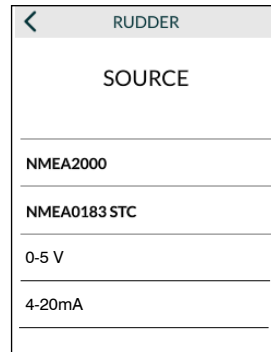
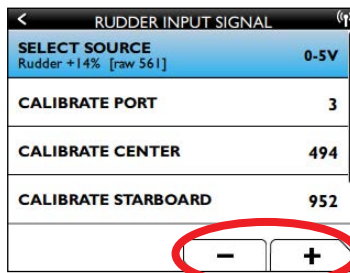
The SRC detects if there is a short circuit or cable breakdown on the sensor. If a fault is detected, the Rudder Position is set to 0%, and an ALARM is displayed.

1. Connect the interface cable of a RCU to a 0–5V or a 4–20mA signal as described in the wiring diagram. See *Installation Manual*.

2. Go to:
 CP512: MAIN MENU/ADVANCED SETUP/RUDDER INPUT SIGNAL
 LCP: MAIN MENU/SETTINGS/SYSTEM SETUP/RUDDER



3. Select the source:
 CP512: Select SELECT SOURCE and use the +/- buttons to select 0–5V or 4–20mA.
 LCP: Tap SOURCE and select 0–5V or 4–20mA.



Requirements on analog sensor signals for the SRC to function properly:

- 0–5 Volt sensor: The sensor resistance must be between 200 Ω [raw 40] to 4.9 kΩ [raw 1000]
- 4–20mA sensor: Sensor output range between 4.0 and 20.0 mA.

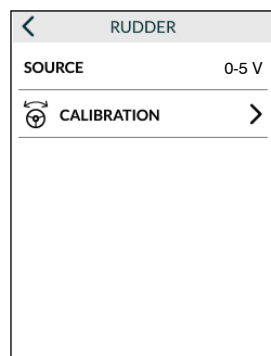
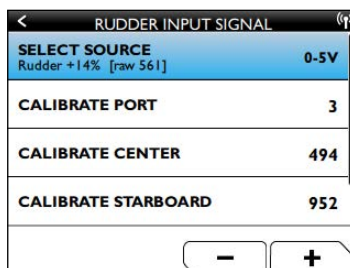
Calibrate the Rudder Input Signal

Make sure to have installed the correct electrical hardware before proceeding with the calibration of the rudder input signal.

1. Go to:
 CP512: MAIN MENU/ADVANCED SETUP/RUDDER INPUT SIGNAL
 LCP: MAIN MENU/SETTINGS/SYSTEM SETUP/RUDDER

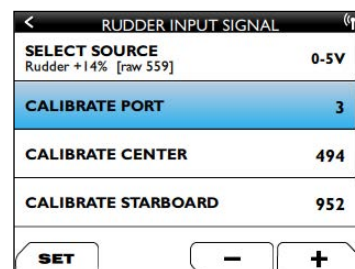
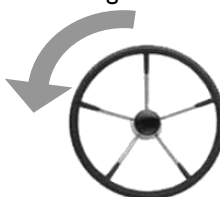
2. Select the source according to Table 1.

- CP512: Select SELECT SOURCE and use the +/- buttons to select the source.
 LCP: Tap SOURCE and tap the source from the list of sources that is shown.



Calibrate Full Port:

3. Turn the rudder to full port. The raw value in HCS-5 will change.
4. CP512: Select CALIBRATE PORT.
5. CP512: Press SET to set the value for full port.
6. CP512: Use the PLUS/MINUS function keys to adjust the value if needed.

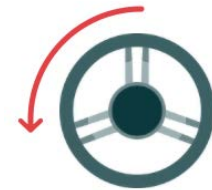
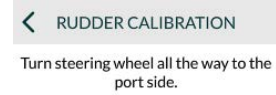


NOTE!

On the LCP, follow the rudder calibration guide on screen. You can test and reset calibration after completion.



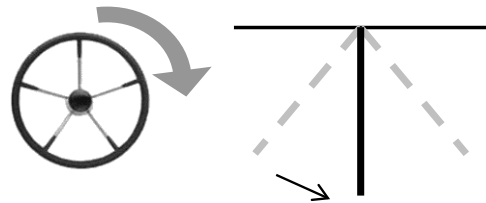
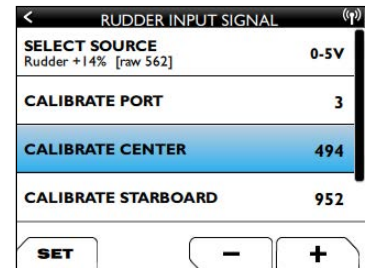
START CALIBRATION



NMEA RUDDER VALUE: 0

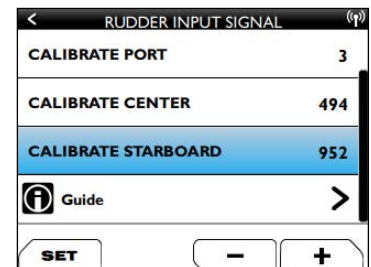
Calibrate Center Position:

7. Turn the rudder to center position. The raw value in HCS-5 will change.
8. CP512: Select CALIBRATE CENTER.
9. CP512: Press SET to set the value for center position.
10. CP512: Use the PLUS/MINUS function keys to adjust the value if needed.



Calibrate Full Starboard:

11. Turn rudder to full starboard. The raw value in HCS-5 will change.
12. CP512: Select CALIBRATE STARBOARD.
13. CP512: Press SET to set the value for full starboard.
14. CP512: Use the PLUS/MINUS function keys to adjust the value if needed.



Verify the Calibration:

15. Turn rudder to full port, center and full starboard positions and watch the calibrated Rudder Pos indication.

When the calibration is properly performed, the Rudder Input Signal will show the following values (a difference of +/- 2 is acceptable):

- a. Rudder to full port -100 % (minus 100)
- b. Rudder at center position 0 % (zero)
- c. Rudder to full starboard 100 % (plus 100)

NOTE!

If the rudder signal value does not change when the rudder is moving, the setup of the signals, or the wiring installation, are not properly done. Check the cable connections and rudder signal from the external steering system.

MULTI FUNCTIONAL DISPLAY (OPTIONAL)

NOTE!

The Humphree system requires the use of an LCP to integrate with a Multi Functional Display (MFD).

NOTE!

Make sure that the Ethernet cables are connected to the same network as the MFD before the MFD application is set up. See the *Installation Manual* for more information about connecting the MFD and the LCP.

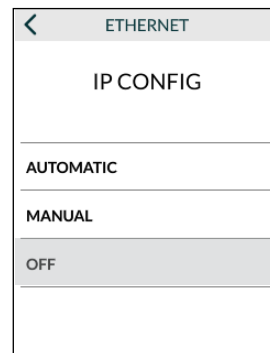
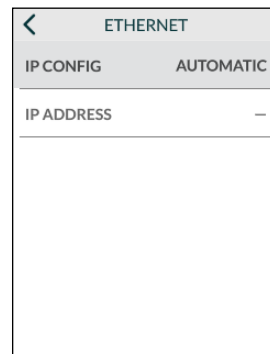
The Humphree system appears automatically in the app drawer of the MFD. Power up all devices and look for the Humphree application:

- Garmin: Tap HOME/VESSEL/HUMPHREE
- Simrad and Raymarine: Tap the app drawer icon and select the Humphree icon

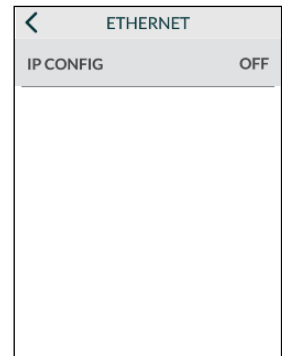


If the Humphree screen does not appear on the MFD, keep the MFD turned on and do the following steps on the LCP:

1. Go to ETHERNET settings:
LCP only: MAIN MENU/SETTINGS/CONNECTIONS/ETHERNET
2. Go to IP CONFIG settings:
LCP only: Tap IP CONFIG.
3. Set IP CONFIG to OFF:
LCP only: Tap OFF

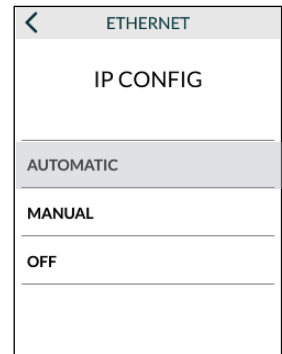


- Go to IP CONFIG settings again:
LCP only: Tap IP CONFIG



- Set IP CONFIG to AUTOMATIC:
LCP only: Tap AUTOMATIC

The control panel will automatically look for a MFD on the network. If it is not powered on at this step, it will not find it.



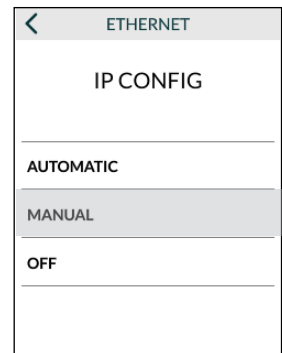
Manual IP Configuration

If there is a need to manually configure the connection:

- Go to ETHERNET settings:
LCP only: MAIN MENU/SETTINGS/CONNECTIONS/ETHERNET
- Go to IP CONFIG settings:
LCP only: Tap IP CONFIG

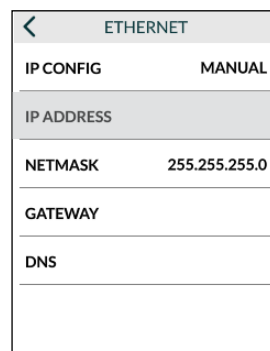


- Set IP CONFIG to MANUAL:
LCP only: Tap MANUAL



- To configure the network settings:
LCP only: Tap a setting, enter a value, and tap APPLY

As an example, the screen to the right is shown when the IP address of the LCP is set.



AUTOMATIC TRIM CONTROL

NOTE!

Make sure to have finished setting up the following before proceeding with the chapter:

- RCU Orientation
- Trim/List Angle
- GPS

Automatic Trim Control (AUTO TRIM) adds automatic adjustment of the vessel trim to provide optimum running trim for highest speed and lowest fuel consumption. A total of four AUTO TRIM curves can be set up depending on different loads. The selected curve name is displayed in the upper right corner of the main screen when AUTO TRIM is turned on.

SET AUTO TRIM CURVE

An AUTO TRIM curve can be manually set by recording the best trim conditions at different speeds and then edit the curve.

Run the vessel in a straight course with constant throttle. Preferably, calm seas, deep water and no tide that can affect the vessel.

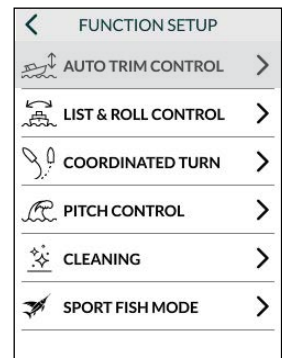
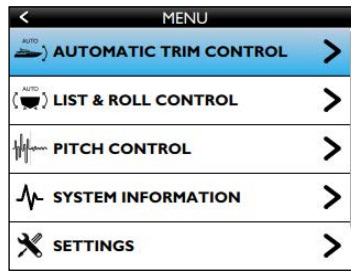
1. Set the vessel speed to 8 knots, with AUTO TRIM turned OFF.
2. Use the TRIM keys (CP512) or swipe (LCP) to detect how much help from the interceptors is needed for different conditions.
3. Note the speed (kn) and how much help from the interceptors that is needed (interceptor extension) in Table 2.
4. Increase the vessel speed about 4 knots. Note the speed and interceptor extension in Table 2.
5. Repeat steps 2 to 4 until the entire vessel speed range is covered. Interpolate the interceptor extension value between the speeds to make a smooth curve with maximum 30% difference between each step.

Speed (kn)	Interceptor Extension (%)
2	0
4	0
6	0
8	Ex 10%
10	
12	
14	
16	
18	
20	
22	
24	
26	
28	
30	
32	
34	
36	
38	
40	

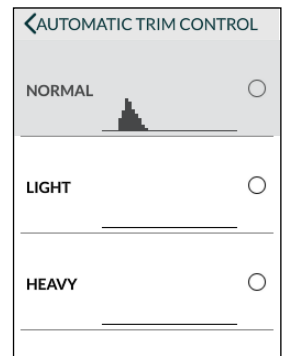
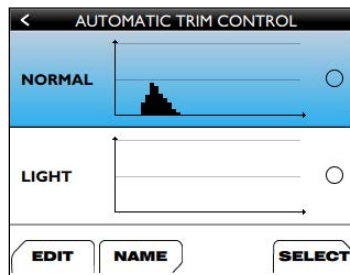
Table 2: Curve parameters for AUTO TRIM.

EDIT CURVE

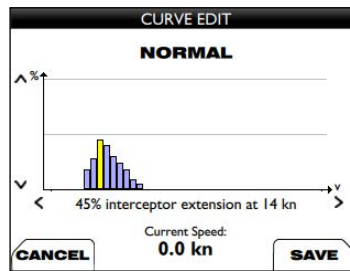
- 1. Go to:
 CP512: MAIN MENU/AUTOMATIC TRIM CONTROL
 LCP: MAIN MENU/SETTINGS/
 FUNCTION SETUP/AUTO TRIM CONTROL



- 2. To choose a curve and to enter curve edit mode:
 CP512: Choose a curve with the TRIM keys and press the EDIT key.
 LCP: Swipe up or down the list and long press a curve.

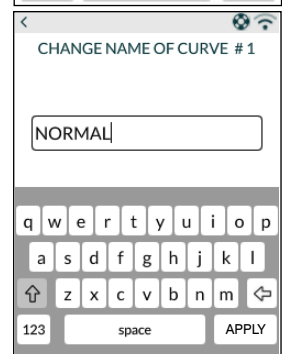
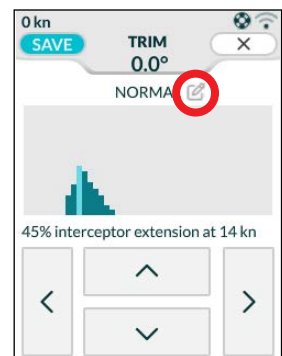


- 3. To edit the curve according to the parameters noted in Table 2:
 CP512: Press the LIST keys to select a speed. Press the TRIM keys to set the interceptor extension for the selected speed.
 LCP: Tap the left and right arrow buttons to select a speed. Tap the up and down arrow buttons to set the interceptor extension for the selected speed.

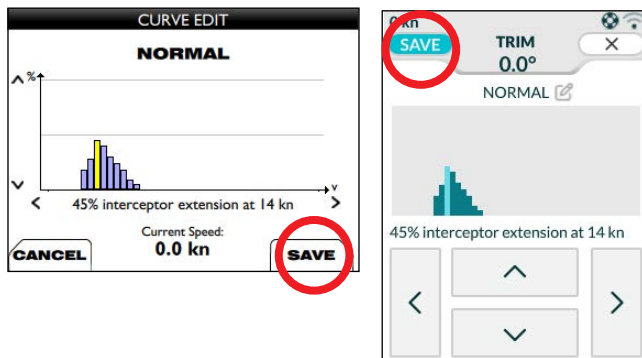


Repeat until all the measurements are entered.

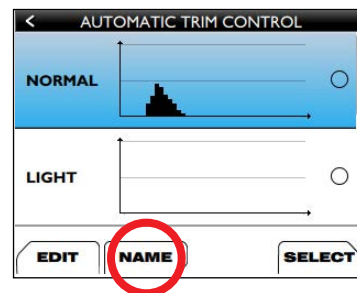
- 4. Even out the curve.
- 5. To change the name of the curve if LCP is used:
 LCP only: Tap the edit icon to the right of the curve name, change the name, and tap the APPLY key.



- 6. To save the curve and exit edit mode:
 CP512: Press SAVE
 LCP: Tap SAVE



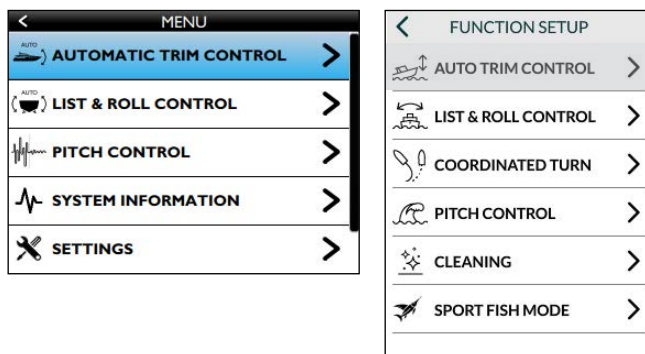
- 7. To change the name of the curve if CP512 is used:
 CP512 only: Choose the curve from the list and press the NAME key. Change the name and press the APPLY key to save the change and exit name edit mode.



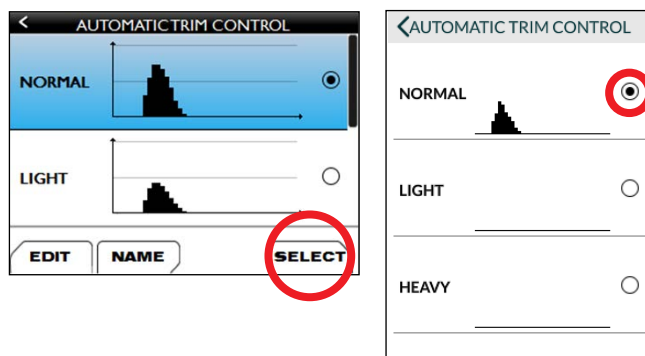
SELECT CURVE

A total of four AUTO TRIM curves can be set up depending on different loads or sea conditions. To select an AUTO TRIM curve:

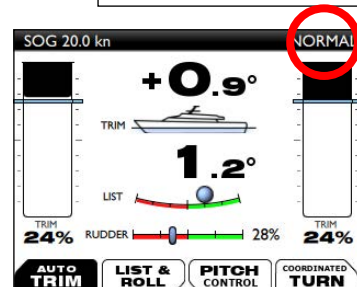
- 1. Go to:
 CP512: MAIN MENU/AUTOMATIC TRIM CONTROL
 LCP: MAIN MENU/SETTINGS/FUNCTION SETUP/AUTO TRIM CONTROL



- 2. To select an AUTO TRIM curve:
 CP512: Choose a curve with the TRIM keys and press the the SELECT key.
 LCP: Swipe up or down the list and tap the button to the right of the curve.



- 3. The selected curve name is displayed in the upper right corner of the main screen on CP512 when AUTO TRIM is turned on.



AUTOMATIC LIST & ROLL CONTROL

AUTO LIST automatically adjusts the vessel's list angle to compensate for cross winds or asymmetric load conditions and strives to keep the vessel on an even keel.

ROLL CONTROL automatically dampens the roll motions to compensate for induced wave motions.

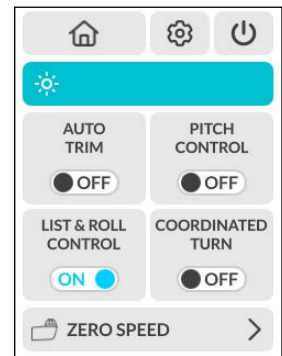
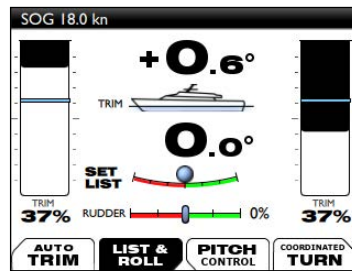
NOTE!

Make sure to have finished setting up the following before proceeding with the chapter:

- RCU Orientation
- Trim/List Angle
- GPS

Turn on List & Roll Control

1. To turn on LIST & ROLL CONTROL:
 CP512: Press the LIST & ROLL function key at the main screen.
 LCP: Tap the LIST & ROLL CONTROL function on the main menu to toggle it on.

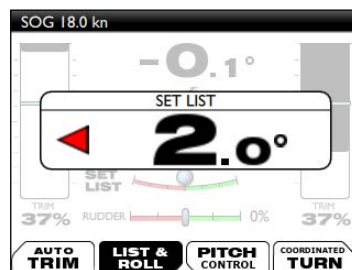


2. The LIST angle now indicates the SET LIST on the CP512 main screen. SET LIST is the desired heel angle of the vessel. SET LIST is normally 0.0° to run on an even keel.

AUTO LIST is automatically activated when the speed exceeds a certain level. The LIST & ROLL function turns black at activation for CP512.

When LIST & ROLL is deactivated, the fins and interceptors return to their neutral position.

3. To manually set the desired SET LIST from port CP512: Use the LIST key
 LCP: Swipe left or right on the controls



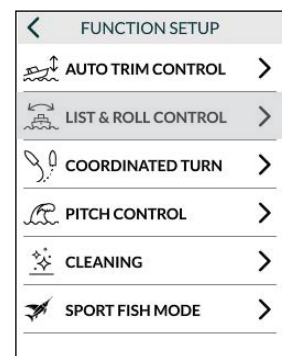
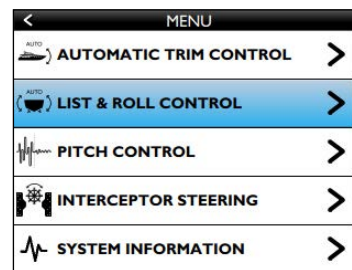
4° to starboard 4°: keys main page

If the speed drops below 4 knots, the SET LIST back to 0.0°. After a turn, SET LIST will also make sure that the vessel runs on an even keel.

automatically switches switch back to 0.0° to

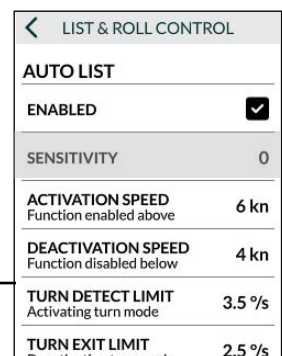
Auto List Settings

1. Go to:
 CP512: MAIN MENU/LIST & ROLL CONTROL
 LCP: MAIN MENU/SETTINGS/FUNCTION SETUP/LIST & ROLL CONTROL



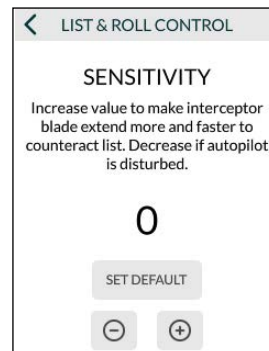
2. Increase the sensitivity for AUTO LIST for faster list control if the compensation is considered slow when the boat enters a new load condition or wind angle. The sensitivity for AUTO LIST ranges from -20 to 10.

- CP512: Select AUTO LIST SENSITIVITY with the TRIM keys
 LCP: Tap SENSITIVITY for AUTO LIST



- To change the sensitivity for AUTO LIST:
 CP512: Press the PLUS/MINUS function keys
 LCP: Tap PLUS/MINUS

Default value: 0



If there is a need to exclude AUTO LIST from LIST & ROLL:

CP512: Select AUTO LIST and press OFF at the LIST & ROLL CONTROL screen.

LCP: Tap the ENABLED checkbox for AUTO LIST on the LIST & ROLL CONTROL screen to clear it.

NOTE!

For **catamaran hulls**, it is recommended to exclude AUTO LIST from LIST & ROLL.

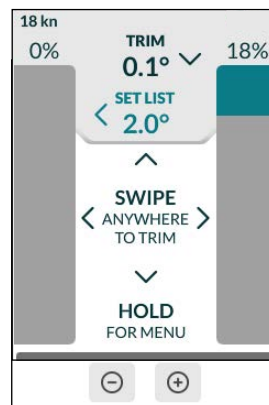
NOTE!

If the speed GPS signal is lost, LIST & ROLL will automatically be switched off. The LIST offset will slowly adjust to 0.

Tips & Tricks

- It is recommended to keep AUTO LIST turned ON.
- To reduce slamming in quartering head sea, use SET LIST to make the bow cut the waves.
- The default AUTO LIST sensitivity setting is 0 which works for most vessels. A bigger vessel (over 80 ft), with a slower rolling period, can generally use a higher sensitivity for faster AUTO LIST operation.
- If the auto-pilot is not working correctly, try decreasing the AUTO LIST sensitivity until the auto-pilot seems to work again. If it does not help to decrease the sensitivity, the auto-pilot must be re-calibrated with AUTO LIST turned ON.
- Some vessels can start to roll back and forth in calm water if the AUTO LIST sensitivity is set too high. Lower the sensitivity for a slower operation and untick ROLL CONTROL.

The system warns when the sensitivity exceeds 5.



Advanced Auto List Settings

The advanced settings for AUTO LIST are found in:

CP512: MAIN MENU/ADVANCED SETUP/AUTOMATIC LIST CONTROL

LCP: MAIN MENU/SETTINGS/FUNCTION SETUP/LIST & ROLL CONTROL

Activation Speed and Deactivation Speed

When AUTO LIST starts to compensate, the speed can be increased or decreased. The deactivation of speed must be set to 1 to 2 knots **below** the activation speed.

- The range of Activation Speed starts at 6 knots and can be increased without limit.

Default value: 6 knots

- The range of Deactivation speed starts at 4 knots and can be increased without limit.

Default value: 4 knots

NOTE!

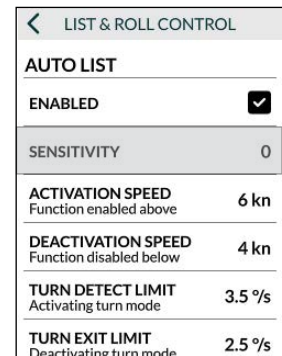
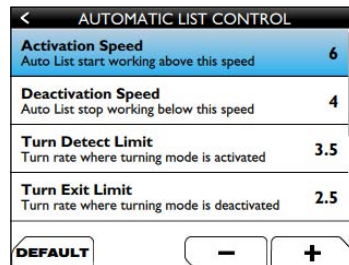
If the boat is accelerating fast, it is not recommended to decrease the speed below the default settings.

To change the Activation speed or Deactivation speed:

1. Select Activation speed or Deactivation speed:

CP512: Select Activation Speed or Deactivation Speed with the TRIM keys

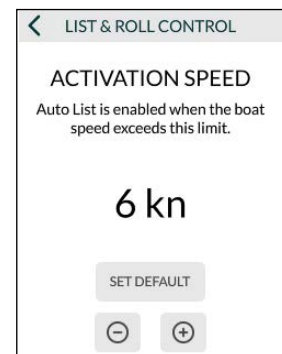
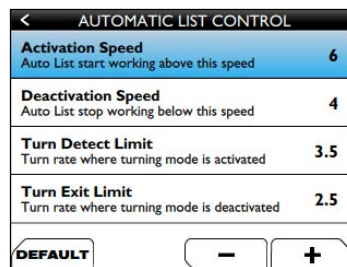
LCP: Tap ACTIVATION SPEED or DEACTIVATION SPEED



2. Change Activation speed or Deactivation speed:

CP512 Press the PLUS/MINUS function keys

LCP Tap PLUS/MINUS



Turn Detect Limit and Turn Exit Limit

The interceptor system enters turning mode when the turn rate of the boat exceeds the turn detect limit [degrees/s]. The Turning mode allows the boat to heel inwards at tighter turns. If it feels like the boat is heeling outwards in the beginning of turns, try lowering the Turn Detect Limit. The Turn Exit Limit must be set to a value of 1 to 2 degrees/s below the Turn Detect Limit.

- The range of Turn Detect Limit is 1–25 degrees/s.

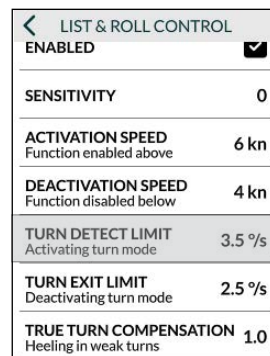
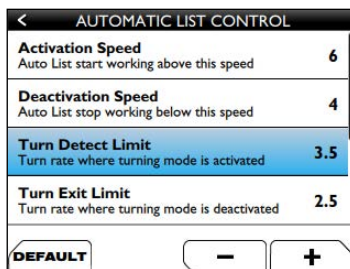
Default value: 3.5 degrees/s (values above 10 available only to disable turning mode).

- The range of Turn Exit Limit is 0.5–24.5 degrees/s.

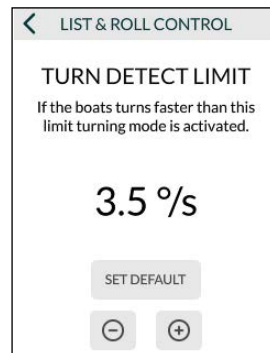
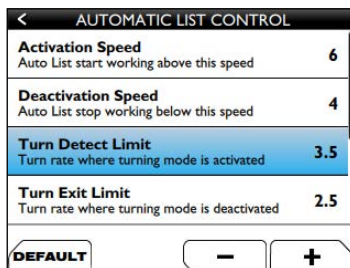
Default value: 2.5 degrees/s (values above 10 available only to disable turning mode).

To change the Turn Detect Limit or Turn Exit Limit value:

1. Select Turn Detect Limit or Turn Exit Limit:
 CP512: Select Turn Detect Limit or Turn Exit Limit with the TRIM keys
 LCP: Tap TURN DETECT LIMIT or TURN EXIT LIMIT



2. Change the TURN DETECT LIMIT or TURN EXIT LIMIT value:
 CP512: Press the PLUS/MINUS function keys
 LCP: Tap PLUS/MINUS



True Turn Compension

If it feels like the boat is leaning outwards throughout weak turns, try increasing the True Turn Compensation. Set it to 0 and the boat strives to go flat throughout the turn. The range of True Turn Compensation is 0 to 10.

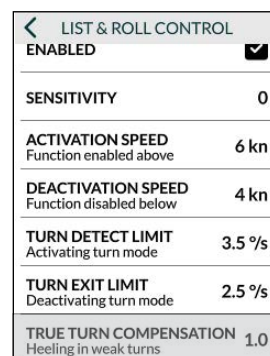
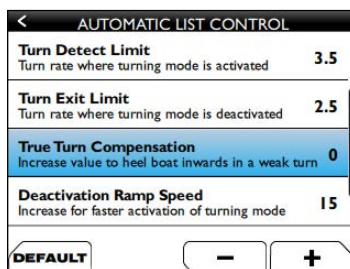
- Default value: 1

NOTE!

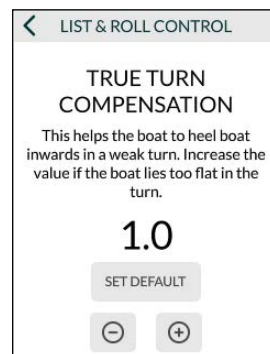
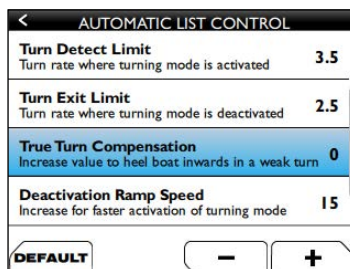
True Turn Compensation has no impact in sharper turns, when the turn rate has exceeded Turn Detect Limit.

To change the True Turn Compensation value:

1. Select True Turn Compensation:
 CP512: Select True Turn Compensation with the TRIM keys
 LCP: Tap TRUETURN COMPENSATION



2. Change the True Turn Compensation value:
 CP512: Press the PLUS/MINUS function keys
 LCP: Tap PLUS/MINUS



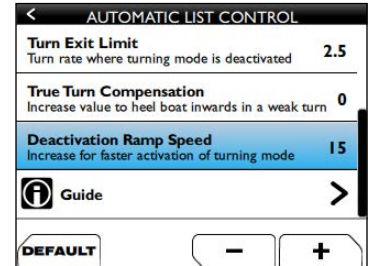
Deactivation Ramp Speed

The activation of Turning Mode is controlled by this ramp time. The ramp time defines how fast the interceptors may move in percent per second when entering Turning Mode. For boats with tight turning radius the value can be increased to enter turning mode faster. The range of Deactivation Ramp Speed is 5 to 125.

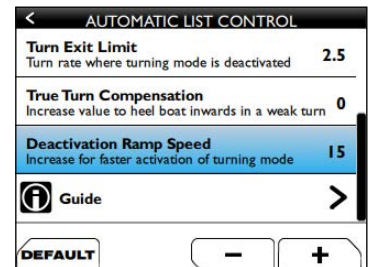
- Default value for interceptors only: 15
- Default value for systems including fins: 75

To change the Deactivation Ramp Speed:

1. Select Deactivation Ramp Speed:
 CP512: Select Deactivation Ramp Speed with the TRIM keys

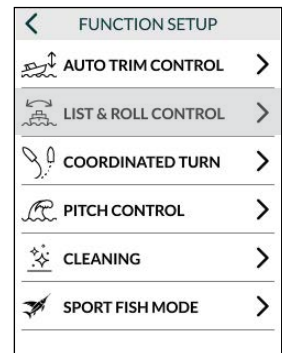
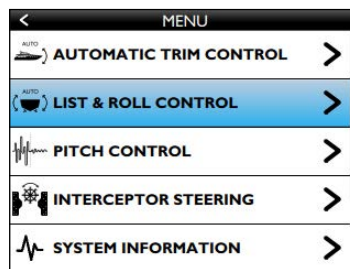


2. Change the Deactivation Ramp Speed value:
 CP512: Press the PLUS/MINUS function keys



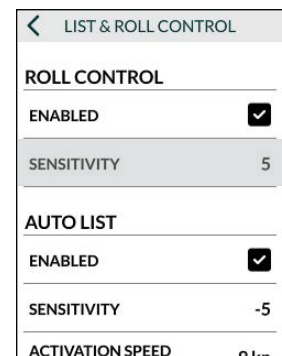
Roll Control Settings

1. Go to:
 CP512: MAIN MENU/LIST & ROLL CONTROL
 LCP: MAIN MENU/SETTINGS/FUNCTION SETUP/LIST & ROLL CONTROL



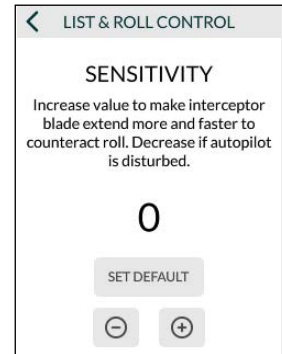
2. Increase the ROLL DAMPING SENSITIVITY (CP512) or the ROLL CONTROL SENSITIVITY(LCP) for stronger roll control. The sensitivity can be adjusted from -20 to +20.

- CP512: Select ROLL DAMPING SENSITIVITY with the TRIM keys
 LCP: Tap SENSITIVITY for ROLL CONTROL



- To change the sensitivity:
 CP512: Press the PLUS/MINUS function keys
 LCP: Tap PLUS/MINUS

Default value: 0



If there is a need to exclude ROLL CONTROL from LIST & ROLL,:

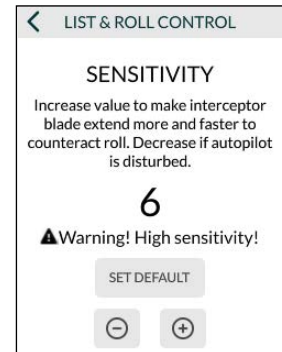
CP512: Select ROLL CONTROL and press OFF at the LOST & ROLL CONTROL creen.

LCP: Tap the ENABLED checkbox for ROLL CONTROL on the LIST & ROLL CONTROL screen to clear it.

Tips & Tricks

- A low ROLL DAMPING SENSITIVITY (CP512) or ROLL CONTROL SENSITIVITY (LCP) will make the system react more slowly to vessel movements and a high sensitivity enables faster reactions.

The system warns when the sensitivity exceeds 5.



- If the auto-pilot is not working correctly, try decreasing the ROLL DAMPING SENSITIVITY (CP512) or ROLL CONTROL SENSITIVITY (LCP) until the auto-pilot seems to work again.

If it does not help to decrease the sensitivity, the auto-pilot must be re-calibrated with ALL Humphree functions turned ON.

- For maximum damping force, exclude AUTO LIST from LIST & ROLL for the system to use full force to dampen roll motions. The system will not strive to keep the vessel at even heel, instead it will use all force for damping.
- If the strongest possible roll damping is preferred, inactivate PITCH CONTROL and increase the ROLL DAMPING SENSITIVITY (CP512) or ROLL CONTROL SENSITIVITY (LCP).

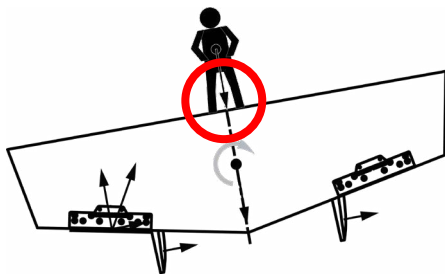
COORDINATED TURN

NOTE!

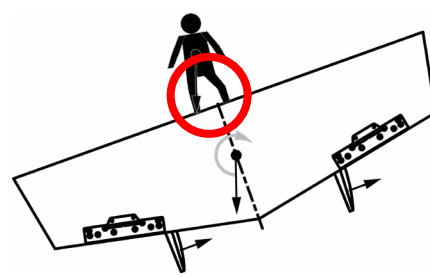
Make sure to have finished setting up the following before proceeding:

- RCU Orientation
- Trim/List Angle
- GPS
- Rudder Input Signal
- It is recommended to set up AUTO TRIM before proceeding with this chapter.

With coordinated turn.



Without coordinated turn.



It is recommended to set curves for a minimum of two different speeds, for example 14, kn 20 kn. If the vessel allows a higher speed, add a few more speeds, especially one for the max speed. For speeds under 10 knots, ramp the gain down to 0%.

NOTE!

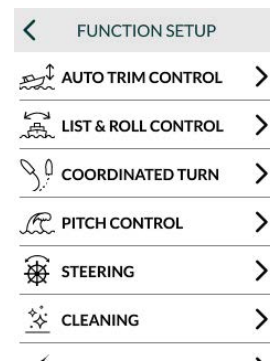
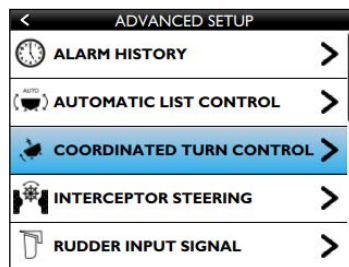
If speed (GPS) signal or the rudder input signal is lost, coordinated turn control is automatically switched off.

SET COORDINATED TURN CURVE

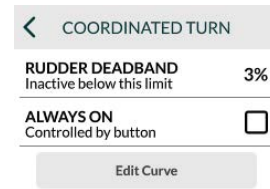
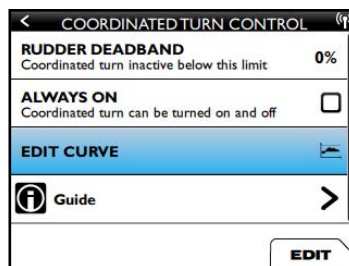
For best result, run the vessel with constant throttle. Find calm seas, deep water and no tide which can effect the vessel.

- Go to:
 CP512: ADVANCED SETUP/
 COORDINATED TURN.

 LCP: FUNCTION SETUP/
 COORDINATED TURN



- Select:
 CP512: EDIT CURVE
 LCP: EDIT CURVE



3. Cruise at a the desired speed.
4. CP512: Use the LIST keys to move the cursor to the same speed as the vessel currently runs in.
LCP: Use the left/right buttons to move the cursor.
5. Turn the rudder to full starboard. It does not matter if the rudder turns to full starboard or full port., but make sure that the correct direction is visible on the screen.
6. CP512: Use the TRIM keys to change the gain for the current speed.
LCP: Use the up/down button to change gain for the current speed.
7. CP512: Use the LIST buttons to move the cursor to another speed interval.
LCP: Use the left/right buttons to move the cursor to another speed interval.
8. Repeat the steps 3 to 6.
9. Repeat the steps 3 to 6 with a different speed (if the vessel allows a speed that high).
10. Even out the curve in between the different speeds.
11. Press SAVE.

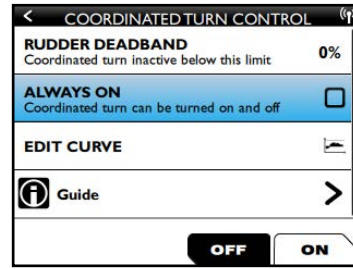
RUDDER DEADBAND

A **RUDDER DEADBAND** means that the **COORDINATED TURN** will not be activated until the rudder passes a set limit. For example, the deadband can be set to 30%, that means that the **COORDINATED TURN** feature will not be activated until the captain turns the rudder more than 30% to either port or starboard.

If the vessel reacts sensitively when making small steering adjustments then increase the rudder deadband a few percent.

ALWAYS ON

When the ALWAYS ON box is ticked, COORDINATED TURN cannot be turned off on the main screen.



PITCH CONTROL

PITCH CONTROL automatically dampens the pitch motions to compensate for induced wave motions.

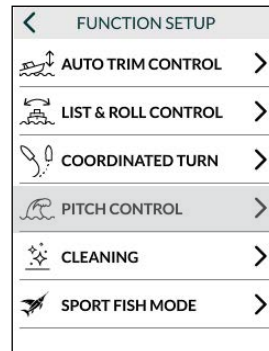
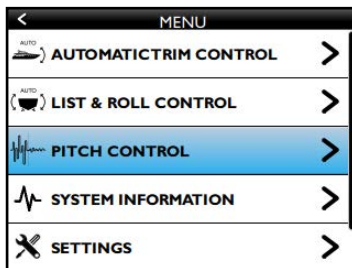
NOTE!

Make sure to have finished setting up the following before proceeding:

- RCU Orientation
- Trim/List Angle
- GPS

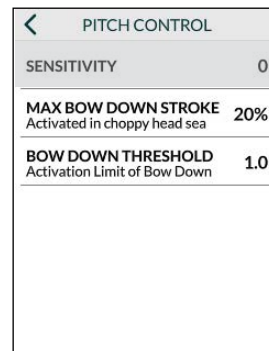
Pitch Control Settings

1. Go to:
 CP512: MAIN MENU/PITCH CONTROL
 LCP: MAIN MENU/SETTINGS/
 FUNCTION SETUP/PITCH
 CONTROL



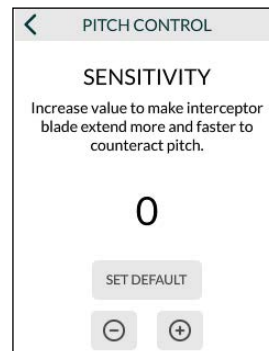
2. Increase the PITCH DAMPING SENSITIVITY (CP512) or PITCH CONTROL SENSITIVITY (LCP) for stronger pitch control. The sensitivity ranges from -20 to +20.

CP512: Select PITCH DAMPING SENSITIVITY with the TRIM keys
 LCP: Tap SENSITIVITY for PITCH CONTROL



3. To change the sensitivity:
 CP512: Press the PLUS/MINUS function keys
 LCP: Tap PLUS/MINUS

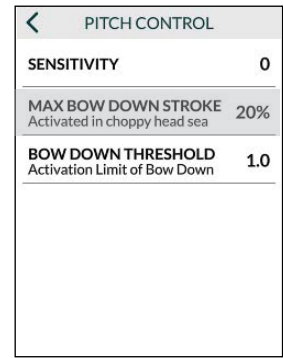
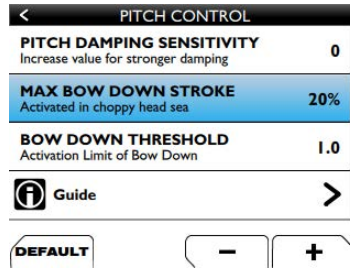
Default value: 0



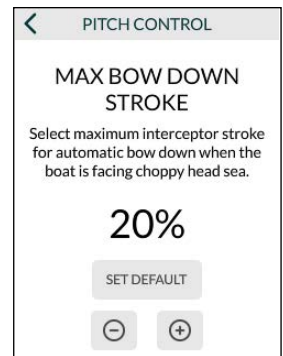
- Adjust the desired interceptor force for automatic bow down with MAX BOW DOWN STROKE.

CP512: Select MAX BOW DOWN STROKE with the TRIM keys
 LCP: Tap MAX BOW DOWN STROKE

The Automatic Bow Down function has a wave detection that detects choppy head sea and extends the interceptors automatically to trim down the bow to calm down the motions and improve the comfort.

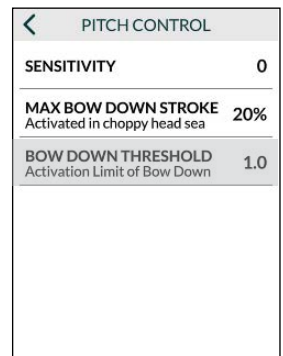


- To change the MAX BOW DOWN STROKE:
 CP512 Press the PLUS/MINUS function keys
 LCP: Tap PLUS/MINUS
 Default value: 20%

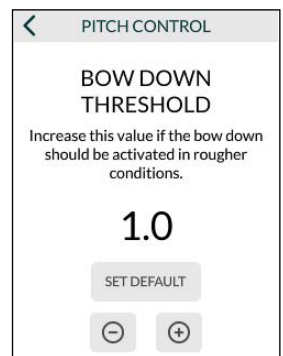
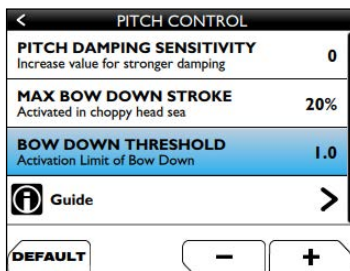


- Increase the value of BOW DOWN THRESHOLD if the function reacts in too calm conditions. Decrease the value if the function does not react in choppy head sea.

CP512: Select BOW DOWN THRESHOLD
 LCP: Tap BOW DOWN THRESHOLD

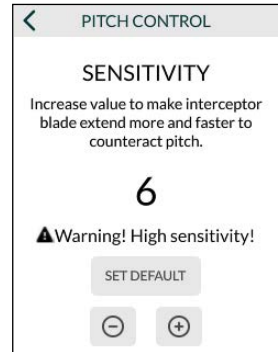


- To change the BOW DOWN THRESHOLD:
 CP512: Press the PLUS/MINUS function keys
 LCP: Tap PLUS/MINUS
 Default value: 1.0



Tips & Tricks

- If the strongest possible pitch damping is preferred, increase the PITCH DAMPING SENSITIVITY (CP512) or PITCH CONTROL SENSITIVITY (LCP) and go to MAIN MENU/LIST & ROLL CONTROL (CP512) or MAIN MENU/SETTINGS/FUNCTION SETUP/LIST & ROLL CONTROL and exclude ROLL CONTROL from LIST & ROLL.
- The system warns when the sensitivity exceeds 5.



INTERCEPTOR STEERING

NOTE!

Make sure to have finished setting up the following before proceeding:

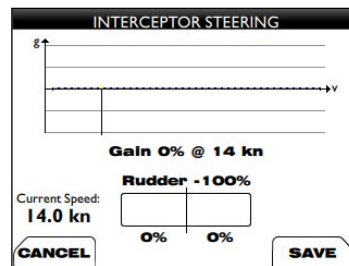
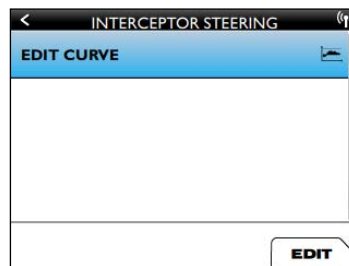
- RCU Orientation
- Trim/List Angle
- GPS
- Rudder Input Signal
- Handshaking Signals

Set Interceptor Steering Curve

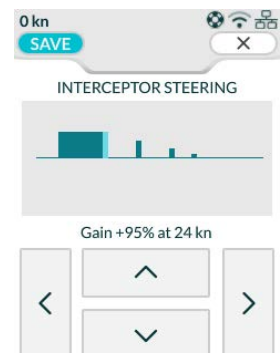
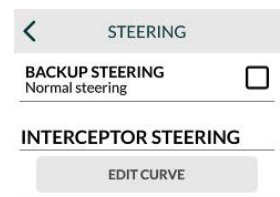
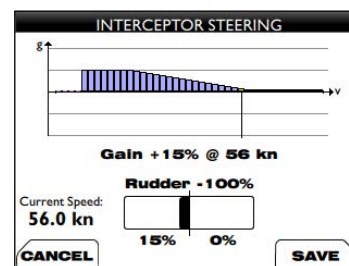
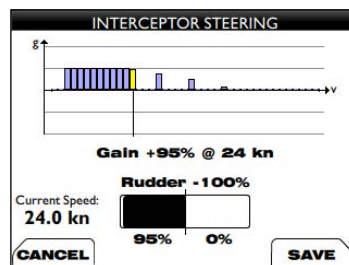
NOTE!

The following curve is created with example values.

1. Go to:
 CP512: MAIN MENU/ADVANCED SETUP /INTERCEPTOR STEERING
 LCP: FUNCTION SETUP/ INTERCEPTOR STEERING
2. Enter curve edit mode::



3. Cruise at a desired speed.
4. CP512: Use the LIST keys to place the cursor at the same speed as the vessel.
 LCP: Use left/right button to place the cursor at the same speed as the vessel.
5. CP512: Use the TRIM keys to set the effect of the interceptor steering.
 LCP: Use the up/down button to set the effect of the interceptor steering.
6. Repeat the steps 3 and 4 for several different speeds.
7. Even out the curve between the different speeds.
8. Press SAVE to exit the menu.



Backup Steering

If the operator is not able to steer the vessel using the external steering system, the interceptors can provide steering force which help steer the vessel.

1. Go to:
CP512: MAIN MENU/INTERCEPTOR STEERING
2. Turn on backup steering:
CP512: Tick the BACKUP STEERING box



3. CP512: Go back to the main screen and use the LIST function keys to steer the vessel.

NOTE!

- When Backup Steering is activated, the operator will not be able to manually change the list angles.
- The steering force is zero when the speed is below five knots.

Handshaking Signals

Handshaking signals are used between the Humphree Control System (HCS) and the Main Steering Control System (Main Steering) on board the vessel to control which steering system should be used during the speed range and steering wheel/auto pilot command. The handshaking signals can be set up through a serial interface or an analog interface.

For example:

Speed under 10 knots:

- Main Steering Control System only.

Speed 10–40 knots.

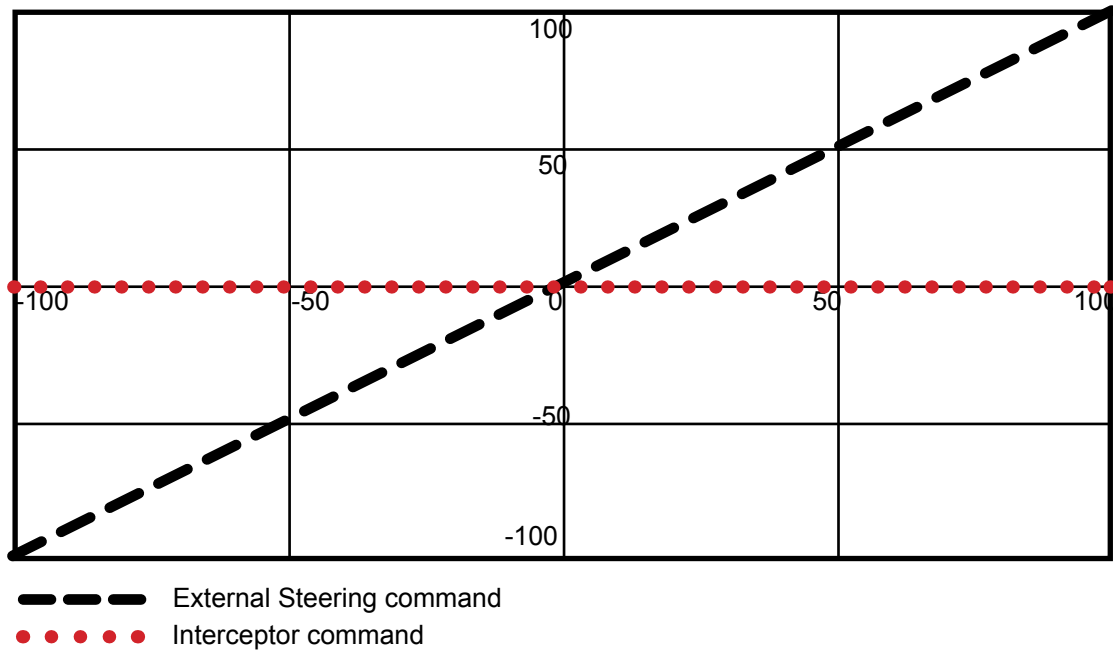
- Humphree Interceptor Steering up to 50% of steering wheel/auto pilot command.
- More than 50% of steering wheel/auto pilot command the Main Steering is also used.

Speed above 40 knots.

- Humphree Interceptor Steering up to 80% of steering wheel/auto pilot command.
- More than 80% of steering wheel/auto pilot command the Main Steering is also used.

Deadband for External Steering System

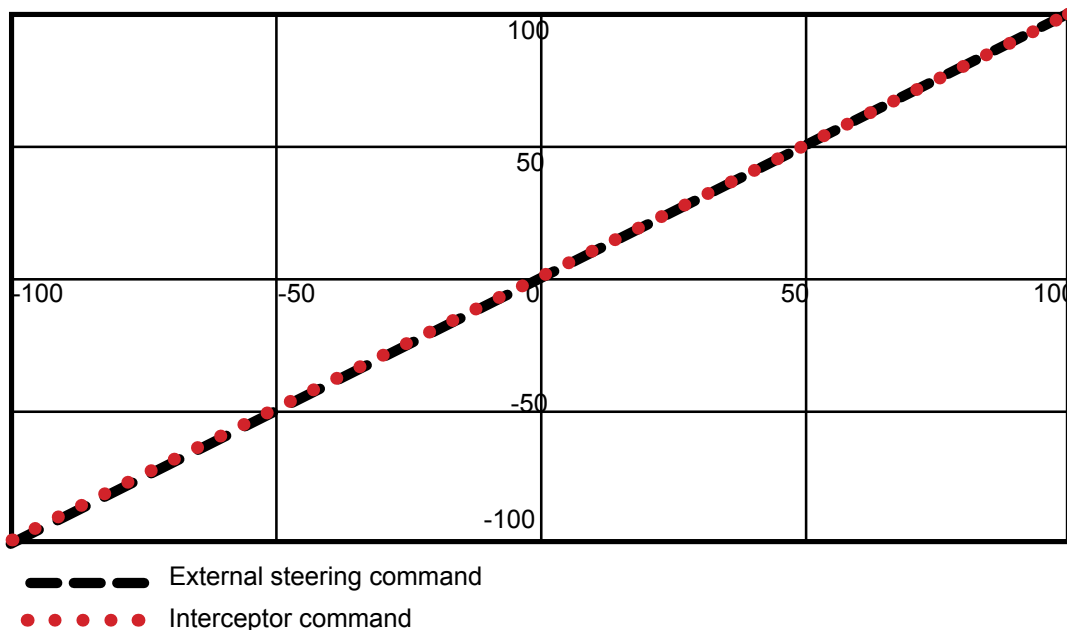
When INTERCEPTOR STEERING is activated, the external steering system on the vessel must send a steering command like the following graph:



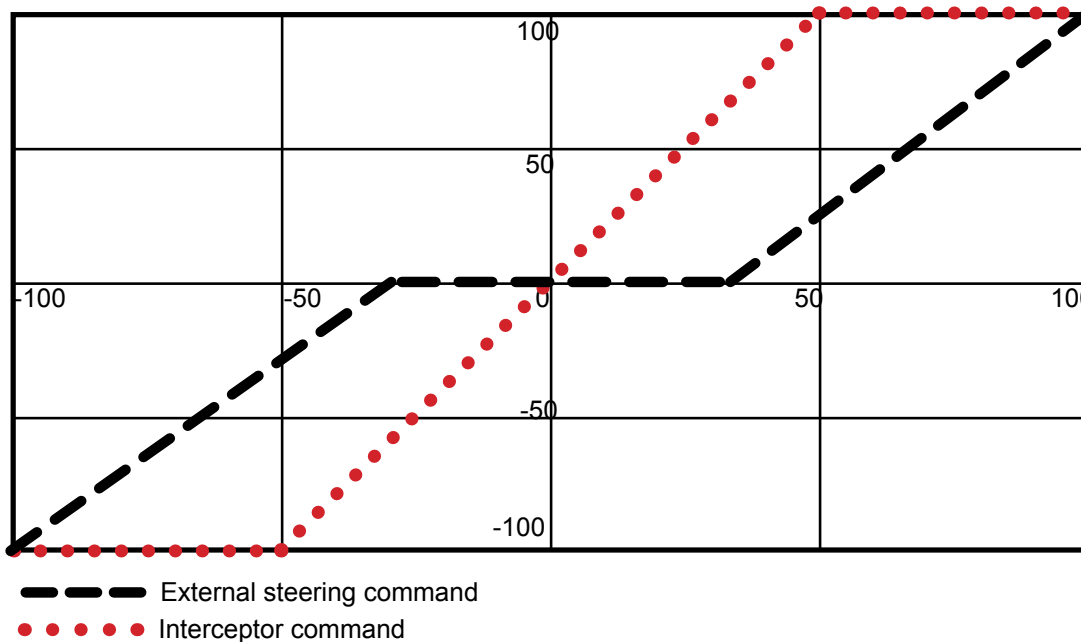
Graph 1. The INTERCEPTOR STEERING command is in the deadband below VI.

When the interceptors start to be effective, it is possible to command them in two different ways.

1. In combination with the external steering system on the vessel (See Graph 2).
2. Stand alone up to a defined rudder input signal (See Graph 3).The interceptors are steering until the rudder input signal is above 30%.The external steering command kicks in when the rudder input signal is above 30%.



Graph 2. Both the interceptor command and external steering command works between V1 and V2.



Graph 3. The external steering command is in the deadband up to 30% of the rudder input signal.

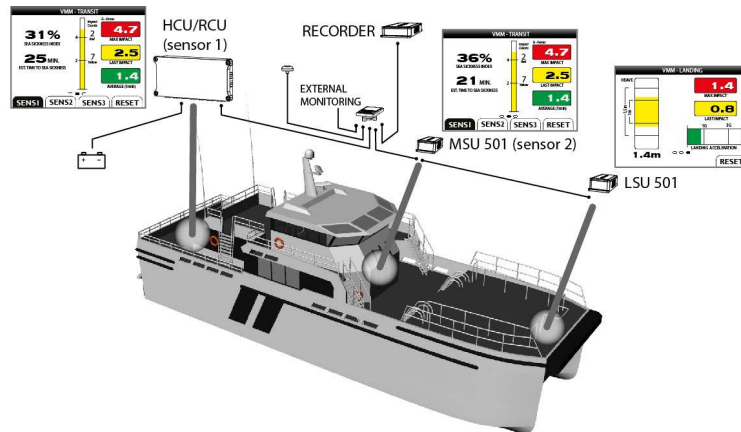
VESSEL MOTION MONITORING

Vessel Motion Monitoring (VMM) is used to monitor impacts and motion sickness when the vessel is moving. The sensors in the RCU measures 3D-accelerations and present live data on the display. On the VMM screen, there is a yellow and a red warning level for the acceleration impacts. The warning levels must be set up in the menu. The VMM transit screen is not operational until the warning levels have been setup.

NOTE!

Make sure to have finished setting up the following before proceeding:

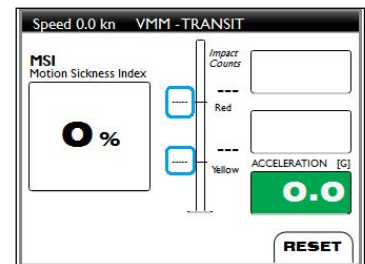
- RCU Orientation
- Trim/List Angle
- GPS



ATTENTION!

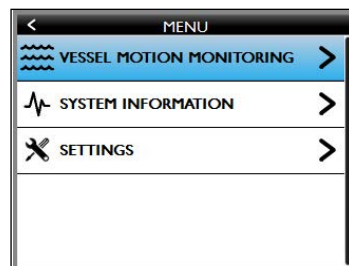
It is the responsibility of the shipyard or operator to select the appropriate warning levels. The settings in this manual are only examples.

CP512: Unadjusted warning levels are indicated as dotted lines.

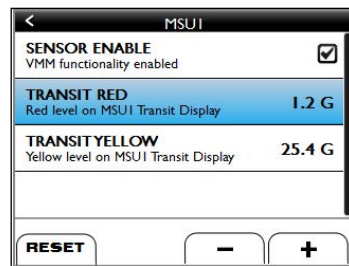


Set the Warning Levels for VMM

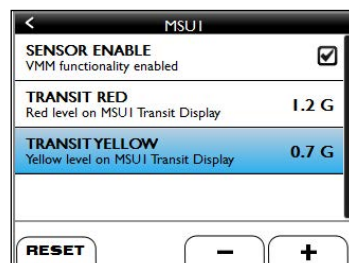
- Go to:
CP512: MAIN MENU/VESSEL MOTION MONITORING



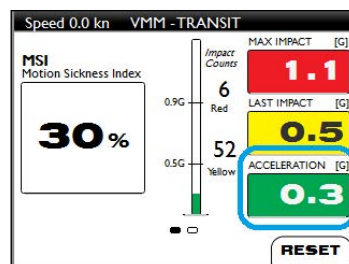
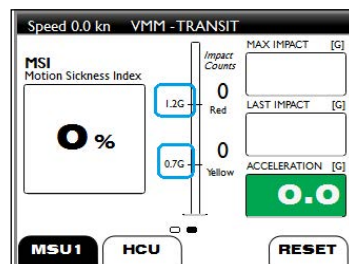
- CP512: Scroll down to TRANSIT RED and press RESET.
- To adjust the desired red warning level for acceleration impacts:
CP512: Use the PLUS and MINUS keys



- CP512: Scroll down to TRANSIT YELLOW and press RESET.
- To adjust the desired yellow warning level for acceleration impacts:
CP512: Use the PLUS and MINUS keys



- CP512: The warning levels are now displayed on the Vessel Motion Monitoring screen.



ADVANCED SETUP

Advanced Setup on CP512

The following menus are found in MAIN MENU/ADVANCED SETUP on the CP512:

- Alarm History
- Automatic List Control, see chapter *Automatic List Control*.
- Coordinated Turn Control, see chapter *Coordinated Turn*.
- Interceptor Steering, see chapter *Interceptor Steering*.
- Rudder Input Signal, see chapter *Rudder Input Signal*.
- EXTBUS, see chapter *Rudder Input Signal*.
- Wi-Fi Hotspot
- Humphree Remote Support
- Sensor Calibration, for *Trim/List Angle Calibration*, see chapter *Required Setup*.
- Fin Settings
- Dimmer
- Measurement
- Simulation

Alarm History

Alarms that are not active are stored in the alarm history. Press CLEAR to delete all the alarms.



Wi-Fi Hotspot

Only used by Humphree technicians.

Humphree Remote Support

Humphree Remote Support is used when a Humphree service technician wants to connect to the Humphree system through internet.

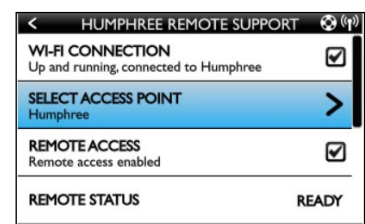
NOTE!

Do not perform the following steps unless a technician has said so.

1. Go to MAIN MENU/ADVANCED SETUP/HUMPHREE REMOTE SUPPORT.
2. Tick the WI-FI CONNECTION box.
3. Make sure that the system is connected to Wi-Fi.

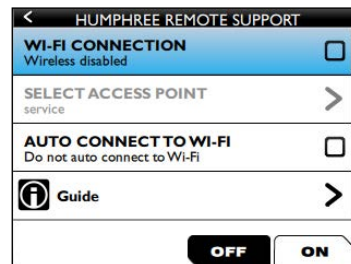
If the system has had a Wi-Fi connection before, it will automatically connect to the Wi-Fi as long as it is within reach.

4. Tick the REMOTE ACCESS box.
5. Make sure the REMOTE STATUS says READY.



Tips & Tricks

- Keep the AUTO CONNECT TO WI-FI box unticked.



Sensor Calibration

RCU Heading Angle

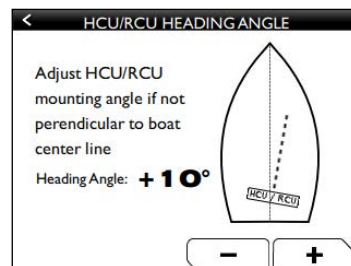
NOTE!

Incorrect Heading Angle will lead to sensor malfunctions in the Humphree system.

If the RCU installed heading angle is more than ±10° misaligned to the center line of the hull this must be adjusted. If there are more than one RCU in the system, the heading angle must correspond to the RCU-1 heading angle.

Example for orientation setting **0**:

1. Find the RCU-1. Make sure that the serial number of RCU-1 corresponds to the one found in MAIN MENU/ SYSTEM INFORMATION/SYSTEM UNITS.
2. Measure, using a protractor (angle measurement device), the heading angle of the RCU from the center line of the vessel.
3. Go to MAIN MENU/ADVANCED SETUP/SENSOR CALIBRATION/RCU I HEADING ANGLE.
4. Press + to change the heading angle to starboard or - to change the heading angle to port.
5. Press the LIST port key to save and exit.



Fin Settings

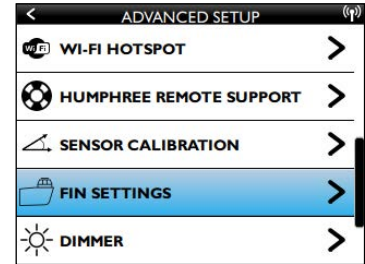
Fin Settings is located in MAIN MENU/ADVANCED SETUP.

Lock Fins

To avoid that the fins might bump into something and get damaged, LOCK FINS means that the fins will hold their set position when the system is in standby mode.

NOTE!

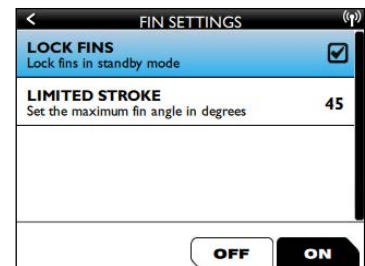
When LOCK FINS is activated, it increases the power consumption in standby. Connect the system to a power outlet.



Activate Lock Fins

1. Go to MAIN MENU/ADVANCED SETUP/FIN SETTINGS.
2. Tick the LOCK FINS box.
3. Go back to the main screen.

Fin Lock mode will always be activated in standby mode.



Limited Stroke

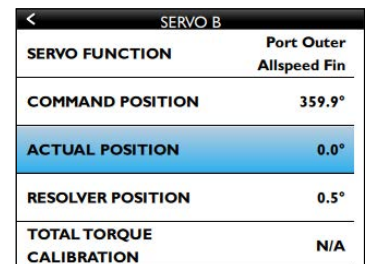
The operator can manually set the angle that the fin can expand to. By limiting the fin range, the fins can not bump into something outside the hull of the vessel. The default angle for LIMITED STROKE is 30°.

NOTE!

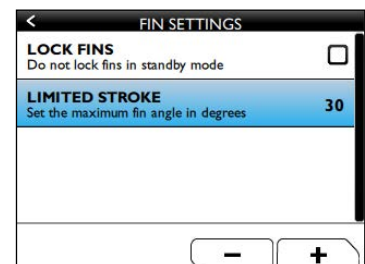
It is recommended to set the LIMITED STROKE when the vessel is still on land, as it is easier to see the fins.

Change the Limited Stroke Angle

1. Use the LIST keys at the main screen to move the fin to its maximum angle within the hull.
2. Go to MAIN MENU/SYSTEM INFORMATION/SYSTEM UNITS.
3. Select the fin in the list.
4. Go to ACTUAL POSITION and note the angle.



5. Go back to the main screen.
6. Go to MAIN MENU/ADVANCED SETUP/FIN SETTINGS.
7. Go to LIMITED STROKE.
8. Use the PLUS/MINUS function keys to change the angle.



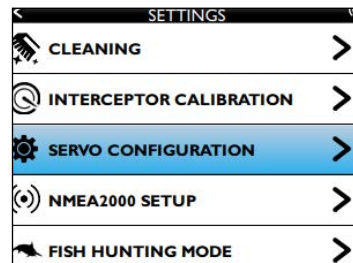
Change Fin Zero Position



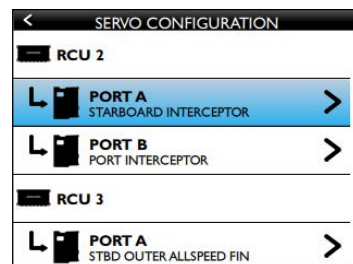
WARNING!

The vessel must be at zero speed when performing a servo configuration. The interceptor deployment can cause undesired vessel movements.

1. Go to MAIN MENU/SETTINGS/SERVO CONFIGURATION.



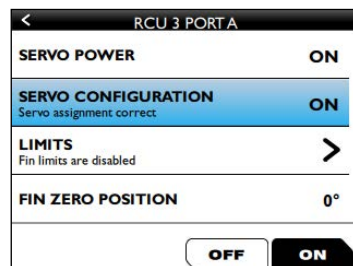
2. Select a servo unit in the list.



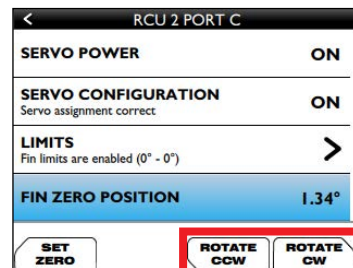
3. Go to SERVO CONFIGURATION and press ON.

NOTE!

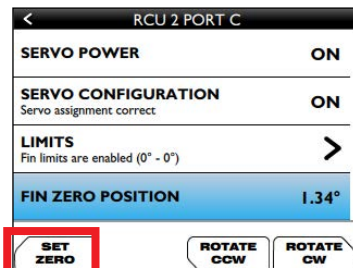
If there is a servo that the system does not recognize, the SERVO CONFIGURATION description field will say *Servo mismatch*.



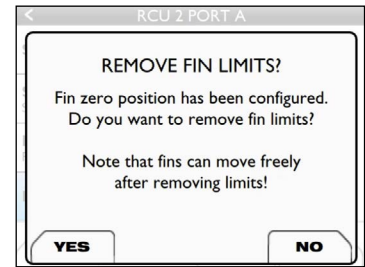
4. Go to FIN ZERO POSITION.
5. Use the function buttons to rotate the fin clockwise and counterclockwise.



6. Press SET ZERO to set the fin zero position.

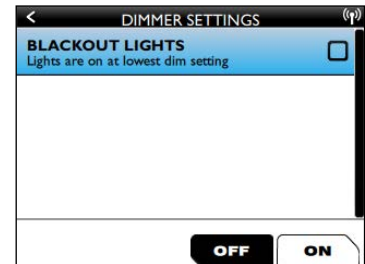


7. Press YES to remove the previous fin limits. (Optional)



Dimmer

Tick the BLACKOUT LIGHTS box to remove the light behind buttons and on screen. The screen will still be visible but without the backlight.



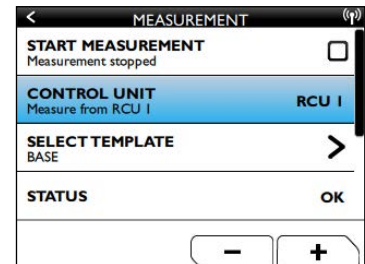
Measurement

Measurement is used when a Humphree service technician wants to perform different types of measurements on the system.

NOTE!

Do not perform the following steps unless a technician has said so.

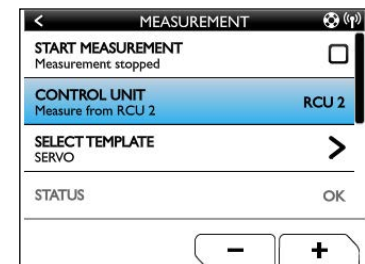
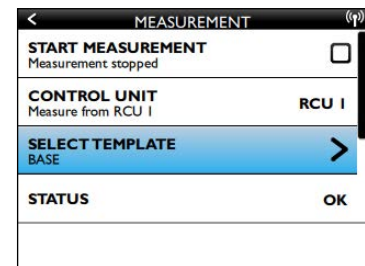
1. Go to MAIN MENU/ADVANCED SETUP/MEASUREMENT.
2. Select the unit to perform the measurements on.



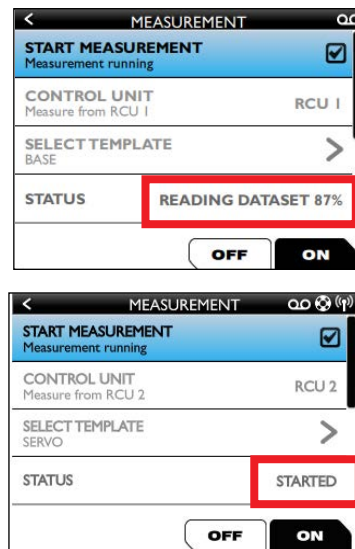
3. Select template.

BASE is used to log the boats movements and in-and-out signals from the Humphree functions.

SERVO is used to troubleshoot servo problems.



4. Tick the START MEASUREMENT BOX.
5. The STATUS indicator says READING DATASET, followed by STARTED, when the measurement is running.



6. Go to UPLOAD MEASUREMENTS to upload the measurements.

NOTE!

A Wi-Fi connection is required.

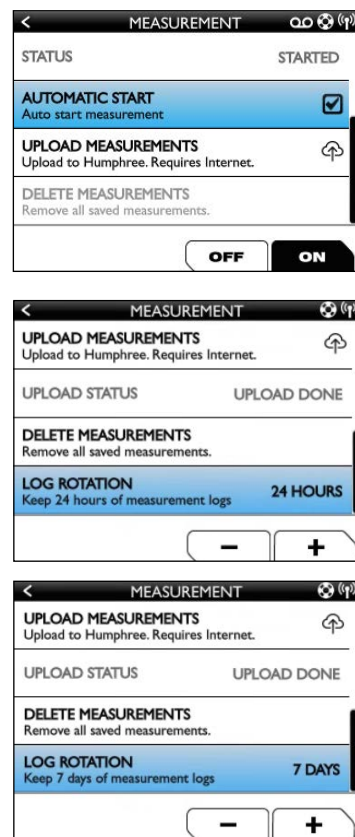
Automatic Measurements

NOTE!

Automatic measurements must only be used by request from a Humphree service technician. The memory can get full if automatic measurements always is on.

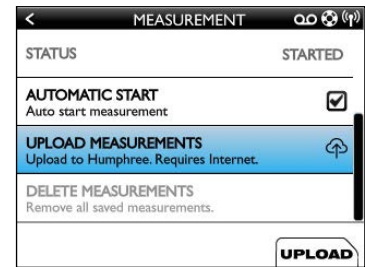
If the vessel has problems, it can be useful to log its movements for a service technician to look at.

1. Tick the AUTOMATIC START box before departure.
2. In LOG ROTATION, select the amount of time that the measuring will be ongoing. The LOG ROTATION range is from 24 hours up to 7 days.



3. The measuring will collect log files while using the vessel.

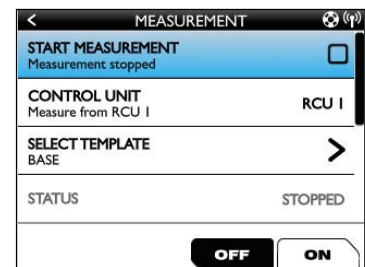
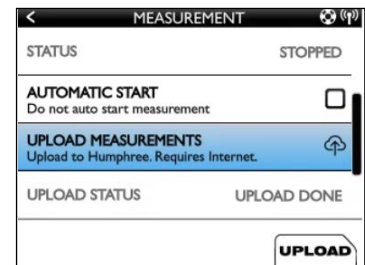
4. When enough data is collected, go to **UPLOAD MEASUREMENTS**.
5. Press **UPLOAD**.



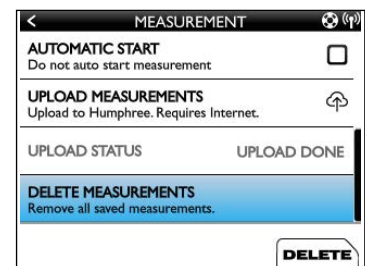
6. Press **YES** when asked to confirm.



7. When the upload is **DONE**, go to **START MEASUREMENTS**.
8. Untick the box.



9. Go to **DELETE MEASUREMENTS**.
10. Press **DELETE**.



NOTE!

If the log rotation time has run out, the oldest log files will automatically be deleted.

NOTE!

Unless a Humphree technician has instructed it, keep the **AUTOMATIC START** box unticked. Otherwise the memory can get full.

Simulation

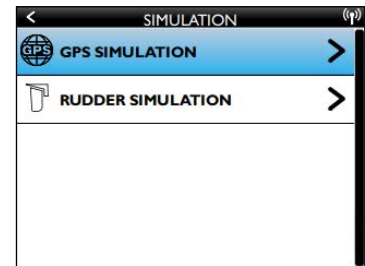
In the Simulation menu, both speed and rudder can be simulated when trying out the functions on the system.

NOTE!

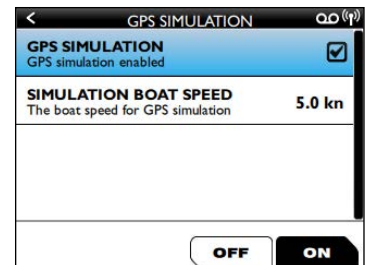
Do not perform the following steps unless a technician has said so.

GPS Simulation

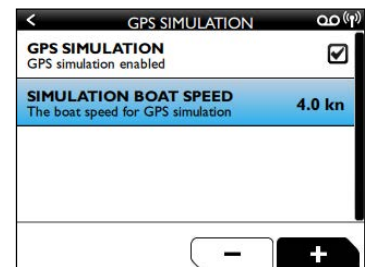
1. Go to MAIN MENU/ADVANCED SETUP/SIMULATION.
2. Select GPS SIMULATION.



3. Tick the GPS SIMULATION box by pressing ON.



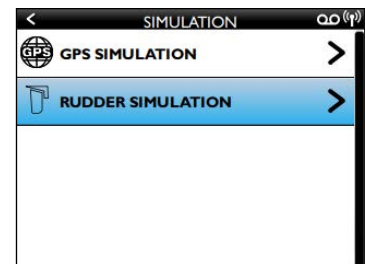
4. Use the PLUS and MINUS function keys to adjust the simulated speed.



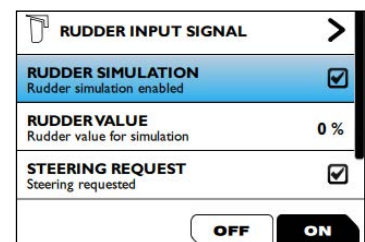
Rudder Simulation

The rudder simulation can be done no matter what rudder input source is used on the system.

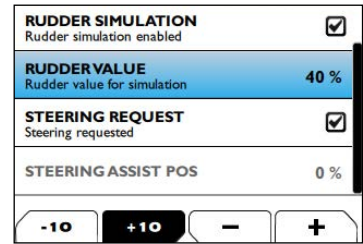
1. Select RUDDER SIMULATION in the SIMULATION menu.



2. Go to RUDDER SIMULATION.
3. Tick the box by pressing ON.



4. Go to RUDDER VALUE.
5. Use the function keys to adjust the rudder simulation.



Advanced Setup on LCP

The following menus are found in MAIN MENU/SETTINGS/ADVANCED on the LCP:

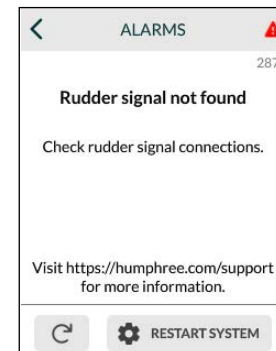
- Alarms
- System Information
- Recordings
- Software Update
- GPS Simulation
- Rudder Simulation
- NMEA 2000 Simulation
- System Config
- CAN Logging
- Miscellaneous
- Help

Alarms

To view a list of active alarms:

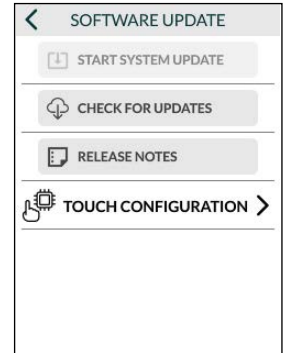
1. Go to MAIN MENU/SETTINGS/ADVANCED/ALARMS.

 2. Tap an alarm for more information. See the Operator Manual for a list of alarms together with information on how to clear them.
- Tap the refresh button to update the list. RESTART SYSTEM will not clear the list, but can solve the problem.



Software Update

Go to MAIN MENU/SETTINGS/ADVANCED/SOFTWARE UPDATE to manually search for the latest software and information. Download percentage is shown at software download.



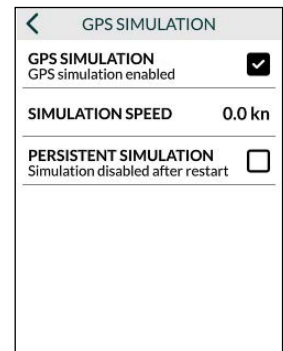
GPS Simulation

It is possible to simulate boat speed to try out system functions.

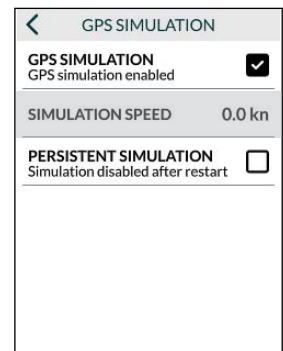
1. Go to MAIN MENU/SETTINGS/ADVANCED/GPS SIMULATION.



2. Tap the GPS SIMULATION box to turn on the GPS simulation.



3. Tap SIMULATION SPEED.



4. Tap PLUS/MINUS to change the simulation speed.



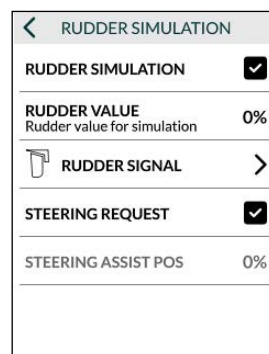
Rudder Simulation

It is possible to simulate rudder positioning to try out system functions.

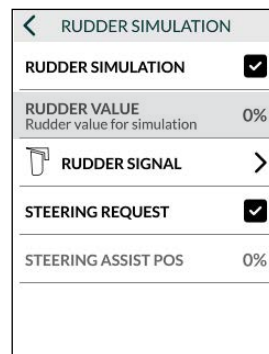
1. Go to MAIN MENU/SETTINGS/ADVANCED/RUDDER SIMULATION



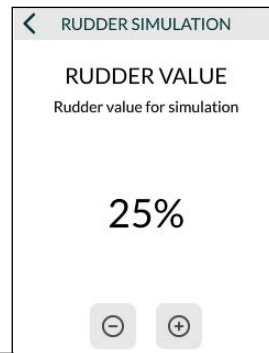
2. Tap the RUDDER SIMULATION box to turn on the rudder simulation.



3. Tap RUDDER VALUE.



4. Tap PLUS/MINUS to change the rudder value.



Miscellaneous

With WAKE ON TOUCH enabled and the key switch cable installed, touching the LCP screen will make the LCP wake up. Restarting the power to the control unit also causes the LCP to wake up when WAKE ON TOUCH is enabled. To avoid this, tap the WAKE ON TOUCH box to clear it.

Ship ID

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