Humphree Control System 5

SETUP MANUAL

INTERCEPTORS

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HUMPHREE®

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1. SAFETY INFORMATION

Please read the manual carefully before installing or operating the Humphree system. Pay extra attention to the safety notices listed under section 1.1 Warnings and Important Notices.

1.1 WARNINGS AND IMPORTANT NOTICES

Three types of warning or notification signs are used in this manual. The signs are listed as follows in order of severity:

WARNING!

WARNING!
Information shown with the WARNING! sign can lead to serious personal injuries or death if it is disregarded.

IMPORTANT!

IMPORTANT!
Information shown with the IMPORTANT! sign can lead to system or property malfunctions or damage if it is disregarded.

NOTE!

NOTE!
Notes contain important information regarding the Humphree system.

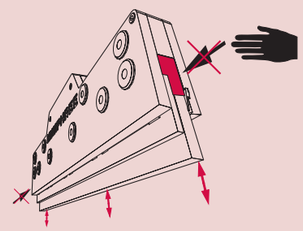
1.2 INTERCEPTOR SAFETY PRECAUTIONS

WARNING!

WARNING!
Disconnect electrical power before performing installation, maintenance, or adjustment work.

WARNING!

WARNING!
Sharp edges, watch your fingers.



2. ABOUT THIS MANUAL

The purpose of this manual is to provide instructions for the correct setup and configuration of the Humphree Control System. Humphree systems may vary depending on configuration, therefore, the procedures and illustrations in this manual are intended as general examples.

This manual is available digitally as a PDF file, and can be downloaded in the following ways: Scan the QR code that is displayed on the product packaging and attached documentation. Use the following Humphree URL address: https://humphree.com/downloads

2.1 INTENDED PRODUCT USE

This manual describes the setup of the Humphree Control System. The control system is compatible with the following Humphree products:

- HSC5 Interceptors
- HLS Interceptors
- Stabilization fins
- HIG5

The system must not be used for any purpose other than its intended use.

2.2 INTENDED AUDIENCE

This manual is intended for authorized Humphree service workshops, shipbuilders, and qualified shipyard personnel. The following instructions are intended for professionals only.

3. FUNCTION OVERVIEW

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

HUMPHREE FUNCTION	REQUIRED SETUP
AUTO TRIM	▪ RCU Orientation ▪ Trim/List Angle ▪ GPS
LIST & ROLL	▪ RCU Orientation ▪ Trim/List Angle ▪ GPS
COORDINATED TURN	▪ RCU Orientation ▪ Trim/List Angle ▪ GPS ▪ Rudder Input Signal
PITCH CONTROL	▪ RCU Orientation ▪ Trim/List Angle ▪ GPS
INTERCEPTOR STEERING	▪ RCU Orientation ▪ Trim/List Angle ▪ GPS ▪ Rudder Input Signal ▪ Handshaking Signals
ZERO SPEED STABILIZATION*	▪ RCU Orientation ▪ Trim/List Angle ▪ GPS
FISH HUNTING MODE	▪ RCU Orientation ▪ Trim/List Angle ▪ GPS
VESSEL MOTION MONITORING	▪ RCU Orientation ▪ Trim/List Angle ▪ GPS ▪ Red and Yellow Impact Levels

* Only applicable for systems equipped with fins.

4. REQUIRED SETUP

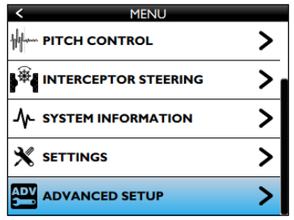
The following are required steps and must be done before using any of the following Humphree functions:

1. Access to advanced Setup (CP500-series only)
2. RCU Orientation
3. Trim/List Angle Calibration
4. GPS Selection
5. Interceptor Calibration

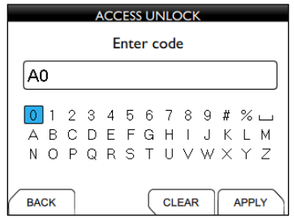
4.1 ACCESS TO ADVANCED SET-UP

On the CP500-series, some of the required setups for the Humphree functions need access to ADVANCED SETUP.

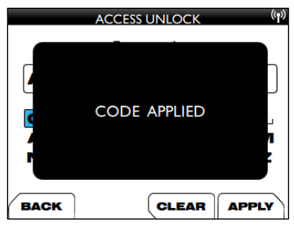
1 Go to MAIN MENU → ADVANCED SETUP.



2 Enter **A0**.



3 Press **APPLY** to proceed.



4.2 RCU ORIENTATION

RCU-1 must always correspond to the RCU orientation selected in the control panel. The default orientation is 0 but the RCU-1 can also be installed in a different orientation than default.

NOTE!

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

IMPORTANT!

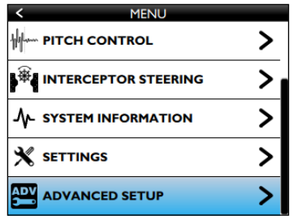
The following steps must be performed before using any of the Humphree functions.

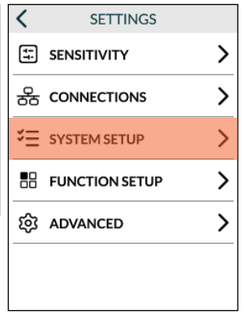
1 Locate RCU-1 in the vessel. Make sure it is visible while performing the following setup.

2 Go to:

CP500-series: MAIN MENU → ADVANCED SETUP

TCP: MAIN MENU → SETTINGS → SYSTEM SETUP

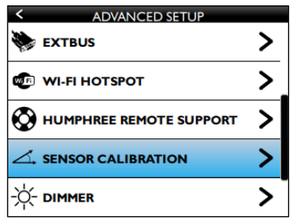


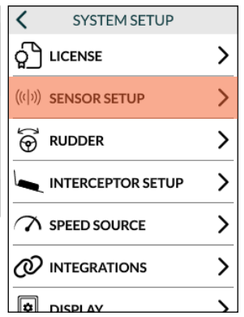


3 Go to:

CP500-series: SENSOR CALIBRATION

TCP: SENSOR SETUP

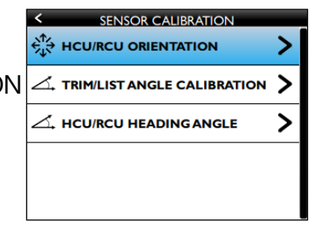


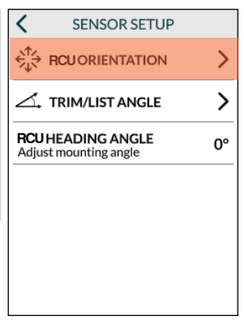


4 Go to:

CP500-series: RCU ORIENTATION

TCP: RCU ORIENTATION



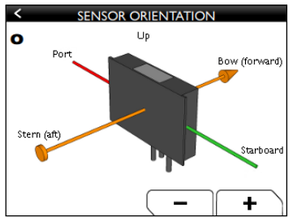


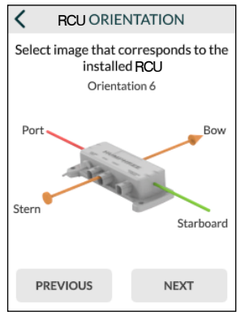
5 To adjust the graphical RCU orientation on the screen:

CP500-series: Use the **PLUS/MINUS** function keys.

TCP: Tap **PREVIOUS/NEXT**.

Make sure the orientation shown on the screen matches the physical orientation of RCU-1 installed in the vessel.





6 Wait two minutes before proceeding with the required setup.

4.3 TRIM/LIST ANGLE CALIBRATION

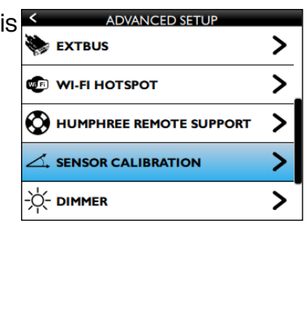
IMPORTANT!

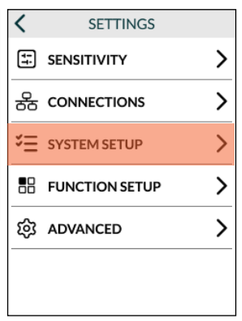
Incorrect calibration of trim/list angles will lead to malfunctions in the Humphree system.

IMPORTANT!

Make sure the vessel is docked, stationary, and has a list angle of 0° before proceeding.

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

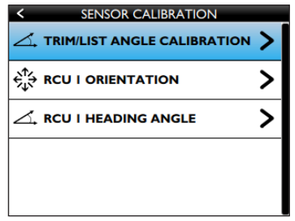


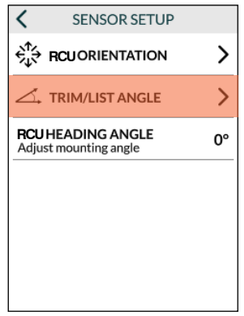


2 Go to:

CP500-series: MAIN MENU → ADVANCED SETUP → SENSOR CALIBRATION

TCP: MAIN MENU → SETTINGS → SYSTEM SETUP → SENSOR SETUP

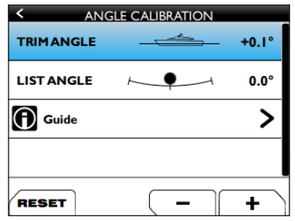


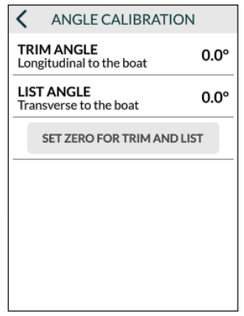


3 Go to:

CP500-series: TRIM/LIST ANGLE CALIBRATION

TCP: TRIM/LIST ANGLE

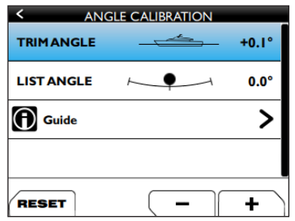


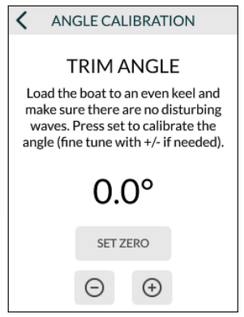


4 To set the TRIM and LIST angle to 0°.

CP500-series: Select **TRIM ANGLE** and press **RESET**. Select **LIST ANGLE** and press **RESET**.

TCP: Tap **SET ZERO** for **TRIM AND LIST.**





5 To fine tune the **TRIM** or **LIST** angles and individually set them to 0°:

CP500-series: Select **TRIM ANGLE** or **LIST ANGLE** and press the **PLUS/MINUS** function keys.

TCP: Tap **TRIM ANGLE** or **LIST ANGLE** and tap **PLUS/MINUS**.

4.4 GPS SELECTION

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

- Humphree GPS (CP500-series only)
- NMEA 2000
- EXTBUS
- Volvo Penta AUX bus

HUMPHREE GPS (CP500-SERIES ONLY)

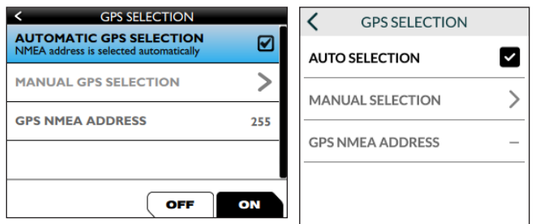
The Humphree GPS will function as soon as it is installed by cable to a CP500-series. Installation instructions for the Humphree GPS cable are found in the *Installation Manual*.

NMEA 2000

With NMEA 2000, selections of available sources for the vessel's speed are made. NMEA 2000 settings are found in:

CP500-series: MAIN MENU → SETTINGS → NMEA 2000 SETUP → GPS SELECTION

TCP: MAIN MENU → SETTINGS → SYSTEM SETUP → SPEED SOURCE → GPS SELECTION



With AUTOMATIC GPS SELECTION (CP500-series) or AUTO SELECTION (TCP) ticked, the system automatically selects a GPS source. The automatic selection option is ticked by default.

If the automatic selection has selected a GPS source that does not work properly, perform the following steps:

1 Note the address of the GPS unit to avoid selecting it in the manual selection procedure.

2 Untick the box:

CP500-series: AUTOMATIC GPS SELECTION

TCP: AUTO SELECTION

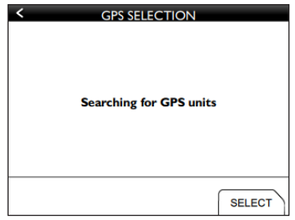
3 Go to:

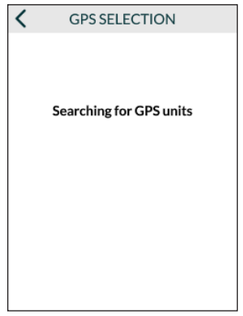
CP500-series: MANUAL GPS SELECTION

TCP: MANUAL SELECTION

4 The system searches for available GPS units and presents a list.

5 Select a GPS unit.

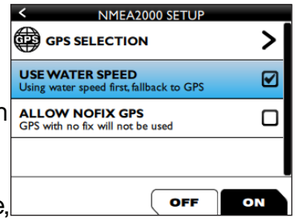




6 If no GPS units are found, check the electrical connections.

WATER SPEED

Tick the **USE WATER SPEED** (CP500-series) box or the **WATER SPEED** (TCP) 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 chapter RUDDER INPUT SIGNAL for further instructions.

VOLVO PENTA AUX BUS (RCU563 ONLY)

GPS signal over AUX bus will function after RCU563 has been connected to the Volvo Penta AUX bus and EVC auto config has been performed.

4.5 INTERCEPTOR CALIBRATION

IMPORTANT!

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

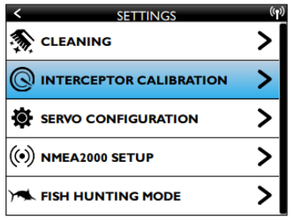
IMPORTANT!

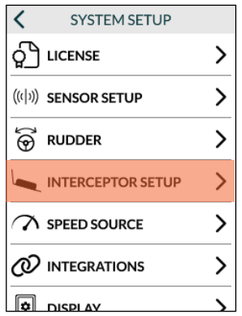
IMPORTANT!
Depending on the installed system, calibration must be completed before the Humphree functions can be used.

1 Go to:

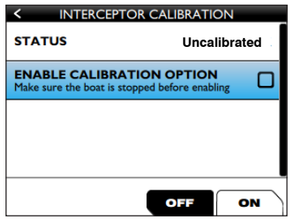
CP500-series: MAIN MENU → SETTINGS → INTERCEPTOR CALIBRATION

TCP: MAIN MENU → SETTINGS → SYSTEM SETUP → INTERCEPTOR SETUP

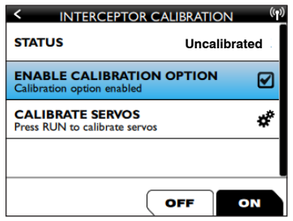




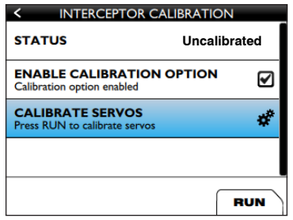
2 **CP500-series only**: Tick the **ENABLE CALIBRATION OPTION** box.



3 **CP500-series only**: **CALIBRATE SERVOS** will be visible on the screen.



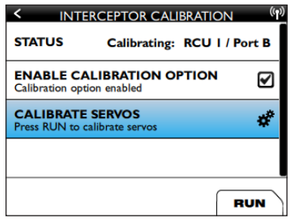
4 **CP500-series only**: Go to **CALIBRATE SERVOS**.

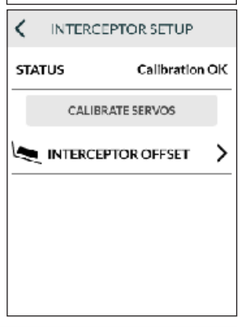


5 To start the interceptor calibration:

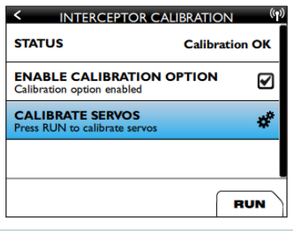
CP500-series: Press **RUN**.

TCP: Tap **CALIBRATE SERVOS**.





6 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 (CP500-series) or MAIN MENU → SETTINGS → ADVANCED → ALARMS (TCP).

5. RUDDER INPUT SIGNAL

IMPORTANT!

IMPORTANT!

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

- Interceptor Steering
- Coordinated Turn

IMPORTANT!

FIN SYSTEMS – ANY FUNCTION

Failure to perform the calibration procedure may void the product warranty.

5.1 INSTALL RUDDER INPUT SOURCES

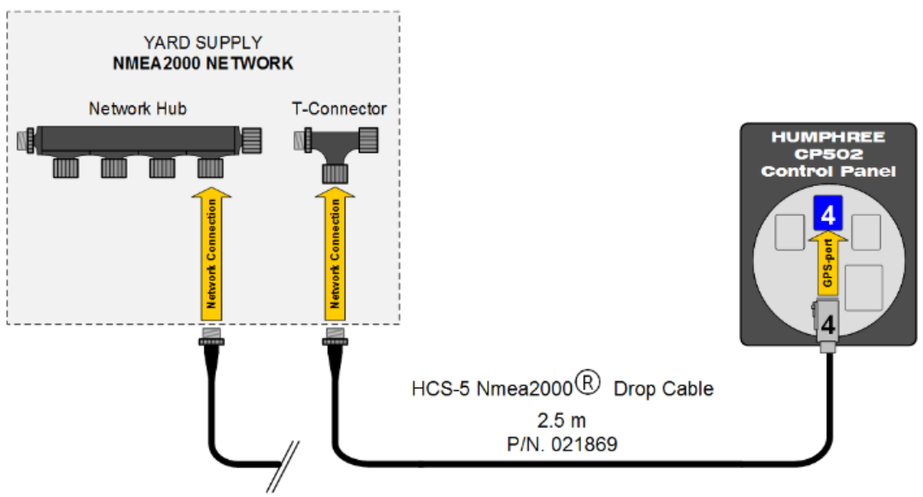
Table 1 is an overview of the different rudder input sources.

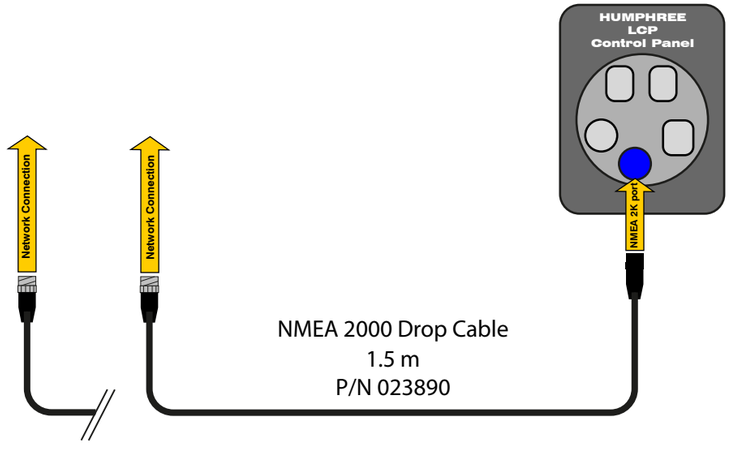
ELECTRICAL INTERFACE	CONNECTION POSITION	SIGNAL	CALIBRATION NEEDED	OTHER
VP1100	Control panel	NMEA 0183	Yes	
Rudder Angle Sender (Ampere)	RCU562	4–20 mA	Yes	
Rudder Angle Sender (Volt)	RCU562	0–5 V	Yes	
EXTBUS	Control Panel RCU562	RSA	Yes	See *EXTBUS Manual* for signal info.
NMEA 2000 Drop Cable	Control Panel	NMEA 2000	Yes	
SIMRAD RF25 & NMR501	RCU	NMEA 2000	Yes	
EXTBUS	Control Panel RCU562	STC	No	See *EXTBUS Manual* for signal info.
Volvo Penta AUX bus	RCU563	Penta	No	

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.

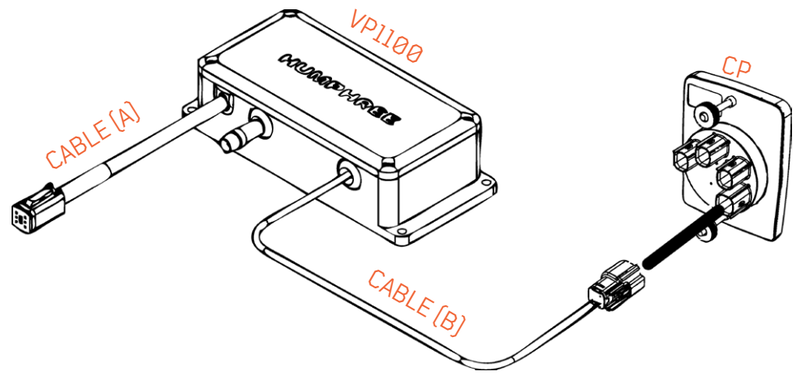
Connect the NMEA 2000 Drop Cable to the Control Panel according to the image.



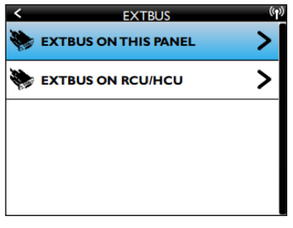


VOLVO PENTA MULTILINK INTERFACE

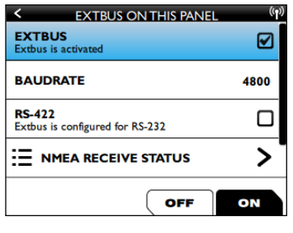
The Volvo Penta Interface (VPI100) is used for reading the rudder position from Volvo Penta engines. The VPI100 shall be installed close to the Humphree Control Panel (CP) to avoid long cable extensions. Mount the VPI100 with four M5 bolts or equivalent.



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:
   CP500-series: MAIN MENU → ADVANCED SETUP → EXTBUS
6. Go to:
   CP500-series: EXTBUS ON THIS PANEL



7. **CP500-series**: Set BAUDRATE of the bus to 4800.
8. **CP500-series**: Untick the RS-422 box.



9. Proceed to section CALIBRATE RUDDER INPUT SIGNAL, and perform the rudder signal calibration procedure.

RS-232/RS-422

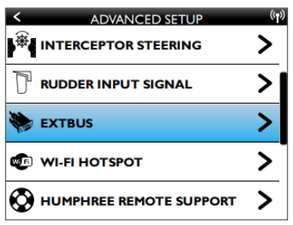
1 Determine the connection type between HCS-5 and the external steering system. Supported communication types are **RS-232** and **RS-422**.

NOTE!
Only one input source can be connected.

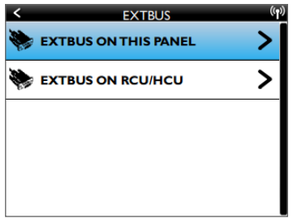
2 Connect the external steering system to HCS-5 using one of the following:
a. EXTBUS cable
b. Interface cable from an RCU (RS-422 only)

NOTE!
The interface cable from an RCU is only compatible with RS-422.

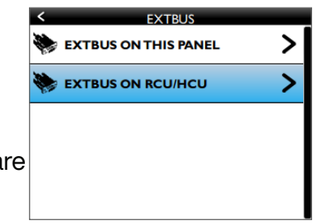
3 Open EXTBUS settings. Go to:
CP500-series: MAIN MENU → ADVANCED SETUP → EXTBUS



4 Select the connection location:
- EXTBUS ON THIS PANEL, or
- EXTBUS ON RCU



5 Perform the steps described in section:
- EXTBUS ON THIS PANEL, or
- EXTBUS ON RCU



6 Configure the external steering system to transmit one of the following NMEA 0183 signals:

a. Rudder Sensor Angle (RSA)
b. Steering Control Signal (STC)

7 Verify that the external system is transmitting steering data. Check that RSA or STC sentences are being received.

8 Determine whether calibration is required:

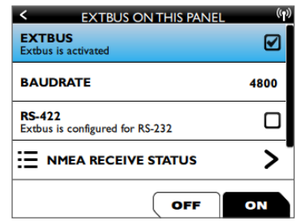
- If STC is selected, no rudder calibration is needed.
- If RSA is selected, perform the following calibrations, see section *CALIBRATE RUDDER INPUT SIGNAL*.

NOTE!
The signals for RSA and STC are described in the *EXTBUS Manual*.

EXTBUS ON THIS PANEL

For the CP500-series.

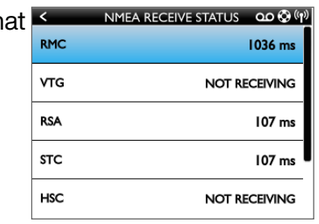
1 Press **ON** to enable **EXTBUS**.



2 Set **BAUDRATE**. The default value is 4800 but it is possible to select 4800, 9600, 19200, 38400, 57600, or 115200.

3 Press **ON** to select RS-422. RS-232 is the default setting.

4 Go to: **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 CP500-series.

a. Rudder Sensor Angle (RSA)

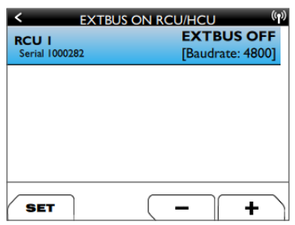
b. Steering Control Signal (STC)

EXTBUS ON RCU

For the CP500-series.

NOTE!
The RCU is only compatible with RS-422.

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



RS-232/RS-422

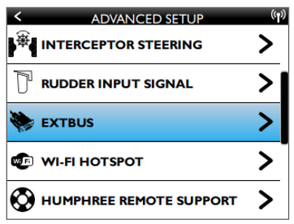
1 Determine the connection type between HCS-5 and the external system. HCS-5 supports RS-232 and RS-422.

NOTE!
Only one input source can be connected.

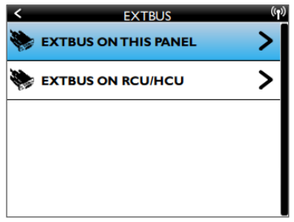
2 Connect the external steering system to HCS-5 using one of the following:
a. EXTBUS cable
b. Interface cable from an RCU (RS-422 only)

NOTE!
The interface cable from an RCU is only compatible with RS-422.

3 Go to:
CP500-series: MAIN MENU → ADVANCED SETUP → EXTBUS



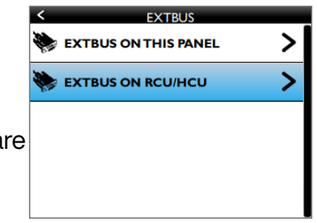
4 Go to:
CP500-series: EXTBUS ON THIS PANEL or EXTBUS ON RCU



5 Perform the steps described in this chapter under **EXTBUS ON THIS PANEL** or **EXTBUS ON RCU**.

6 Configure the external steering system to transmit one of the following NMEA 0183 signals:

a. Rudder Sensor Angle (RSA)
b. Steering Control Signal (STC)



7 Verify that the external system is transmitting steering data. Check that RSA or STC sentences are being received.

8 Determine whether calibration is required:

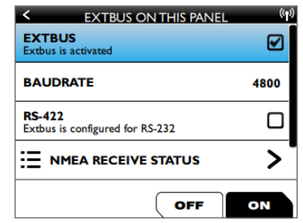
- If STC is selected, no rudder calibration is needed.
- If RSA is selected, perform the following calibrations, see section *CALIBRATE RUDDER INPUT SIGNAL*.

NOTE!
The signals for RSA and STC are described in the *EXTBUS Manual*.

EXTBUS ON THIS PANEL

For the CP500-series.

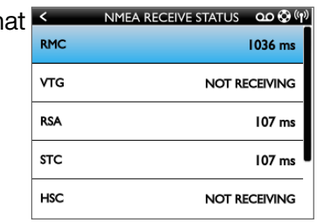
1 Press **ON** to enable **EXTBUS**.



2 Set **BAUDRATE**. The default value is 4800 but it is possible to select 4800, 9600, 19200, 38400, 57600, or 115200.

3 Press **ON** to select RS-422. RS-232 is the default setting.

4 Go to: **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 CP500-series.

a. Rudder Sensor Angle (RSA)

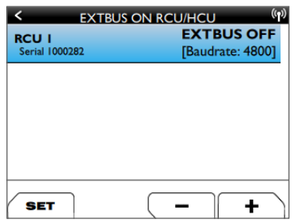
b. Steering Control Signal (STC)

EXTBUS ON RCU

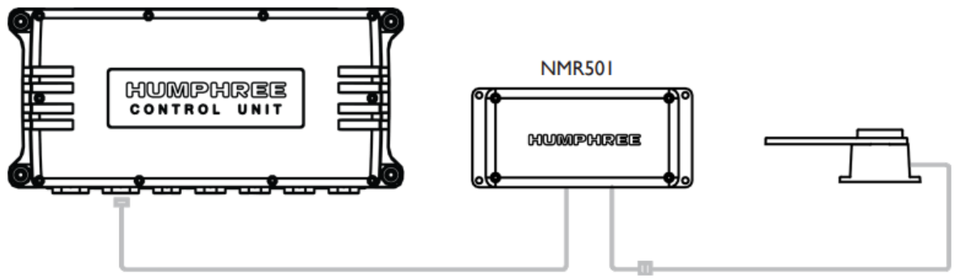
For the CP500-series.

NOTE!
The RCU is only compatible with RS-422.

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



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 0–5 V OR 4–20 mA SIGNAL

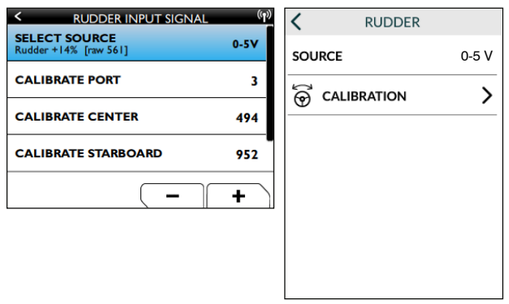
As a safety precaution to reduce the risk of unwanted interceptor movements caused by a malfunctioning rudder position sensor, the Humphree Control System constantly performs a Signal Range Check (SRC) of the sensor value.

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 an RCU to a 0–5 V or a 4–20 mA signal as described in the wiring diagram. See *Installation Manual*.

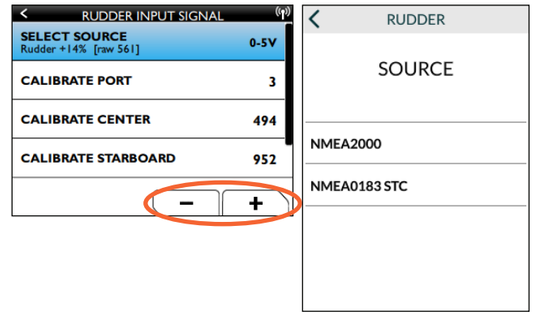
2 Go to:
CP500-series: MAIN MENU → ADVANCED SETUP → RUDDER INPUT SIGNAL

TCP: MAIN MENU → SETTINGS → SYSTEM SETUP → RUDDER



3 Select the source:
CP500-series: Select **SELECT SOURCE** and use the **PLUS/MINUS** function keys to select 0–5 V.

TCP: Tap **SOURCE** and select 0–5 V.



NOTE!

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

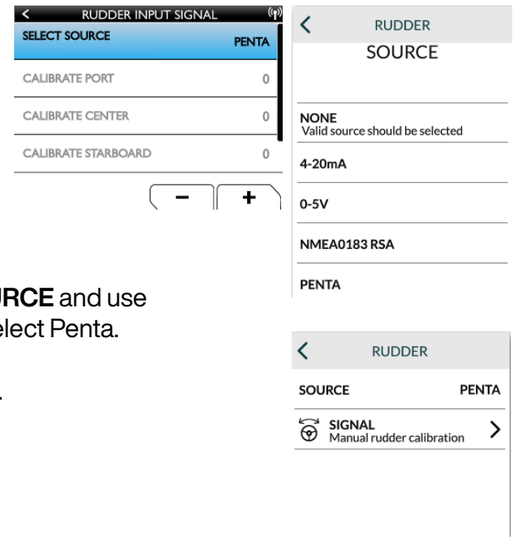
- 0–5 Volt sensor: The sensor resistance must be between 200 Ω [raw 40] to 4.9 kΩ [raw 1000].
- 4–20 mA sensor: Sensor output range between 4.0 and 20.0 mA.

VOLVO PENTA AUX BUS

1 Connect the RCU563 to the Volvo Penta AUX bus, using the included Y-split cable. See *Installation Manual*.

2 Go to:
CP500-series: MAIN MENU → ADVANCED SETUP → RUDDER INPUT SIGNAL

TCP: MAIN MENU → SETTINGS → SYSTEM SETUP → RUDDER



3 Select the source:
CP500-series: Select **SELECT SOURCE** and use the **PLUS/MINUS** function keys to select Penta.

TCP: Tap **SOURCE** and select Penta.

5.2 CALIBRATE RUDDER INPUT SIGNAL

IMPORTANT!

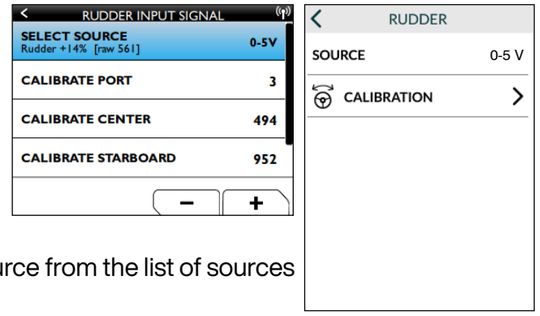
IMPORTANT!
Make sure to have installed the correct electrical hardware before proceeding with the calibration of the rudder input signal.

1 Go to:

CP500-series: MAIN MENU → ADVANCED SETUP → RUDDER INPUT SIGNAL

TCP: MAIN MENU → SETTINGS → SYSTEM SETUP → RUDDER

2 Select the source according to Table 1.



CP500-series: Select **SELECT SOURCE** and use the **PLUS/MINUS** function keys to select the source.

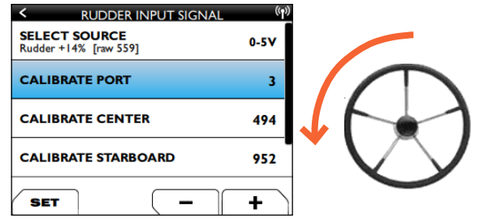
TCP: Tap **SOURCE** and tap the source from the list of sources that is shown.

5.2.1 CALIBRATE FULL PORT

1 Turn the rudder to full port. The raw value in HCS-5 will change.

CP500-SERIES:

2 Select **CALIBRATE PORT**.

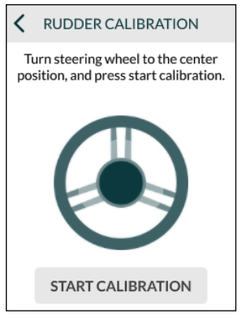


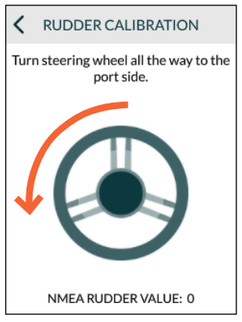
3 Press **SET** to set the value for full port.

4 Use the **PLUS/MINUS** function keys to adjust the value if needed.

TCP:

2 Follow the rudder calibration guide on screen. You can test and reset the calibration after completion.



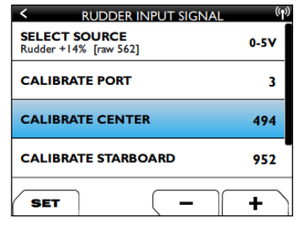


5.2.2 CALIBRATE CENTER POSITION

1 Turn the rudder to center position. The raw value in HCS-5 will change.

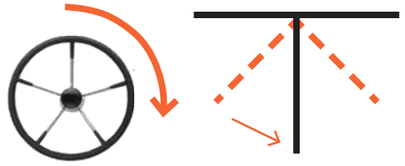
CP500-SERIES:

2 Select **CALIBRATE CENTER**.



3 Press **SET** to set the value for center position.

4 Use the **PLUS/MINUS** function keys to adjust the value if needed.

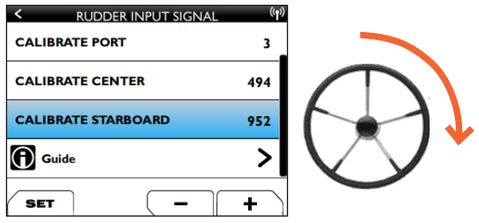


5.2.3 CALIBRATE FULL STARBOARD

1 Turn the rudder to full starboard. The raw value in HCS-5 will change.

2 Select **CALIBRATE STARBOARD**.

3 Press **SET** to set the value for full starboard.



4 Use the **PLUS/MINUS** function keys to adjust the value if needed.

5.2.4 VERIFY CALIBRATION

1 Turn the 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):

RUDDER TO FULL PORT	-100 % (MINUS 100)
RUDDER AT CENTER POSITION	0 % (ZERO)
RUDDER TO FULL STARBOARD	100 % (PLUS 100)

IMPORTANT!

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.

5.3 VIRTUAL RUDDER SIGNAL

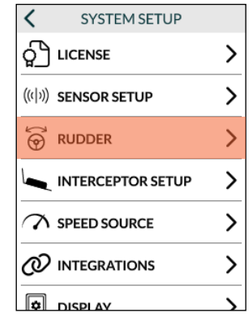
The **Virtual Rudder** function provides a calculated rudder signal when a physical rudder signal is unavailable. No additional hardware is required. The generated signal can be used by Coordinated Turn and other control functions that rely on rudder input.

CALIBRATE VIRTUAL RUDDER

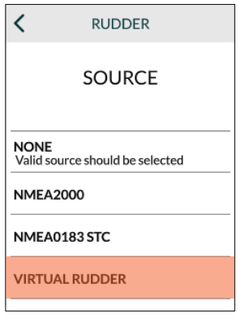
IMPORTANT!

Run the vessel above 10 kn during the calibration.
Perform calibration in calm water with minimal current, wind, and tidal influence.

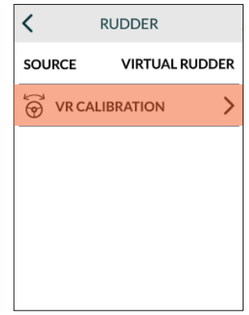
1 Go to MAIN MENU → SETTINGS → SYSTEM SETUP → RUDDER



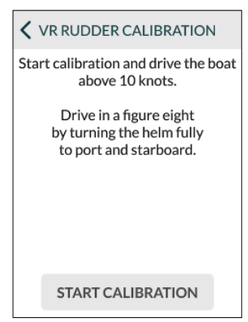
2 Go to **SOURCE** and select **VIRTUAL RUDDER**.



3 Go to **VR CALIBRATION** and tap **START CALIBRATION**.



4 Tap **START CALIBRATION** and follow the instructions on the screen.



5 When calibration is complete, exit the calibration mode and turn the helm from full port to full starboard. Verify that the rudder indicator shows full rudder deflection in both directions.

IMPORTANT!

When calibration is complete, carry on with setting up Coordinated Turn.

6. MULTIFUNCTION DISPLAY (TCP ONLY, OPTIONAL)

NOTE!

The Humphree system requires the use of a TCP to integrate with a Multifunction Display (MFD).

IMPORTANT!

IMPORTANT!

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 TCP.

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

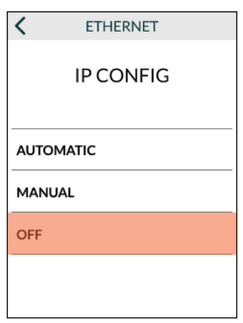
Garmin: Tap HOME → VESSEL → HUMPHREE.
Simrad and Raymarine: Tap the app drawer icon and select the Humphree icon.

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

1 Go to ETHERNET settings: MAIN MENU → SETTINGS → CONNECTIONS → ETHERNET

2 Go to **IP CONFIG** setting. Tap **IP CONFIG**.

3 Set **IP CONFIG** to **OFF**. Tap **OFF**.



OPTIONAL OPTIONAL OPTIONAL

7. AUTOMATIC TRIM CONTROL

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.

IMPORTANT!

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

- RCU Orientation
- Trim/List Angle
- GPS

7.1 SET AUTO TRIM CURVE

An **AUTO TRIM** curve can be created by recording optimum trim conditions at different vessel speeds.

IMPORTANT!

Run the vessel in a straight course with constant throttle.
Perform calibration in calm water with minimal current, wind, and tidal influence.

1 Make sure **AUTO TRIM** is turned **OFF**.

2 Set the vessel's speed to 8 knots and fill in the RPM in Table 2.

3 Determine the interceptor extension required to achieve optimum vessel trim.

Deploy the interceptors by approximately 20 % increments, ranging between 0-100 %.

CP500-series: Use the **TRIM** keys to deploy the interceptors.

TCP: Swipe up or down on the screen to deploy the interceptors.

NOTE!

Keep the same engine RPM throughout the different interceptor deployments.

4 Fill in Table 2 with the recorded data. Record fuel consumption to help identify the most efficient trim setting at each interceptor extension. Mark the preferred trim angle.

5 Increase the vessel's speed by 4 knots and fill in the *new* RPM in Table 2 for the *new* speed.

6 Repeat steps 3 to 5 until the full operating speed range has been covered.

RPM	SPEED (kn)	INTERCEPTOR EXTENSION (%)	FUEL (L/h)	TRIM ANGLE
	E.g. 8	*0*		
		20		
		40 etc.		

RPM	SPEED (kn)	INTERCEPTOR EXTENSION (%)	FUEL (L/h)	TRIM ANGLE
	E.g. 12	*0*		

RPM	SPEED (kn)	INTERCEPTOR EXTENSION (%)	FUEL (L/h)	TRIM ANGLE

RPM	SPEED (kn)	INTERCEPTOR EXTENSION (%)	FUEL (L/h)	TRIM ANGLE

RPM	SPEED (kn)	INTERCEPTOR EXTENSION (%)	FUEL (L/h)	TRIM ANGLE

RPM	SPEED (kn)	INTERCEPTOR EXTENSION (%)	FUEL (L/h)	TRIM ANGLE

RPM	SPEED (kn)	INTERCEPTOR EXTENSION (%)	FUEL (L/h)	TRIM ANGLE

RPM	SPEED (kn)	INTERCEPTOR EXTENSION (%)	FUEL (L/h)	TRIM ANGLE

Table 2: Curve parameters for **AUTO TRIM**

7.2 EDIT CURVE

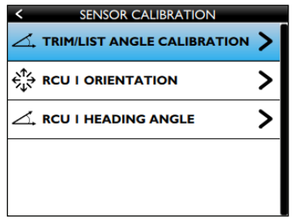
1

Go to:

CP500-series: MAIN MENU → AUTOMATIC TRIM CONTROL

TCP: MAIN MENU → SETTINGS → FUNCTION SETUP → AUTO TRIM

Tick the **CURVE EDITOR** box and go to AUTO TRIM CURVE.

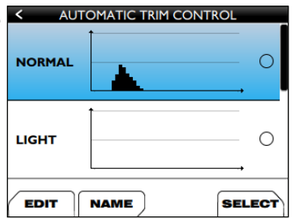


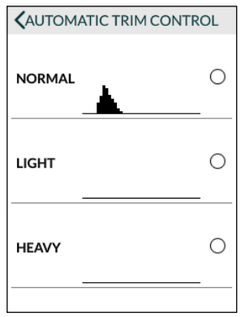
2

To select a curve, and to enter curve edit mode:

CP500-series: Select a curve with the **TRIM** keys and press the **EDIT** key.

TCP: Swipe up or down the list and long press a curve.



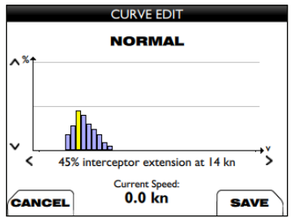


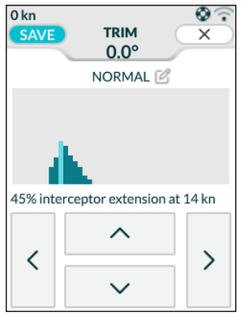
3

To edit the curve according to the parameters noted in Table 2:

CP500-series: Press the **LIST** keys to select a speed.

Press the **TRIM** keys to set the interceptor extension for the selected speed.





TCP: 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.

NOTE!

Enter the preferred value from Table 2. Review the fuel consumption to help identify the optimum trim angle.

4

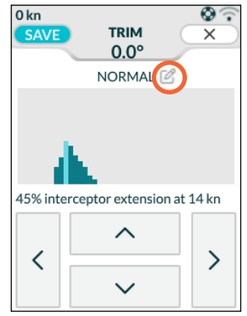
Even out the curve by allowing maximum 30 % difference between the speed columns.

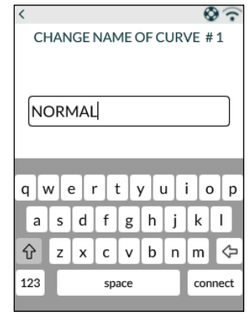
5

OPTIONAL

To change the name of the curve on TCP:

Tap the edit icon to the right of the curve name. Enter a name, and tap the **APPLY** key.



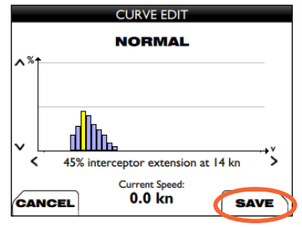


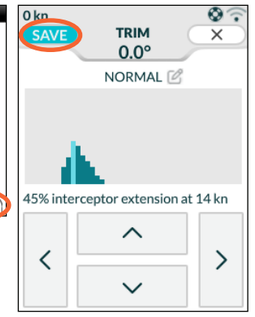
6

To save the curve and exit edit mode:

CP500-series: Press **SAVE**.

TCP: Tap **SAVE**.



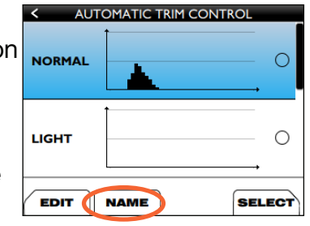


7

OPTIONAL

To change the name of the curve on CP500-series:

Select the curve from the list and press the **NAME** key. Enter a name and press the **APPLY** key to save the change and exit name edit mode.



8

Turn on **AUTO TRIM** and test run the vessel to verify the trim settings. Modify the curve if necessary.

7.3 SELECT CURVE

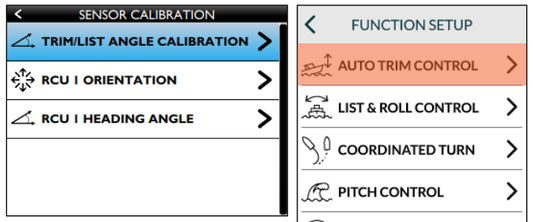
A total of four **AUTO TRIM** curves can be set up depending on different loads or sea conditions. To select an **AUTO TRIM** curve perform the following steps:

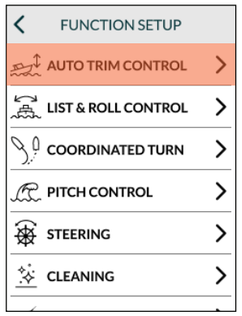
1

Go to:

CP500-series: MAIN MENU → AUTOMATIC TRIM CONTROL

TCP: MAIN MENU → SETTINGS → FUNCTION SETUP → AUTO TRIM CONTROL



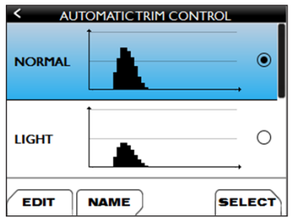


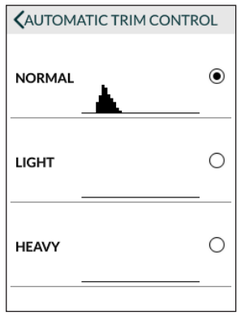
2

To select an **AUTO TRIM** curve:

CP500-series: Choose a curve with the **TRIM** keys and press the **SELECT** key.

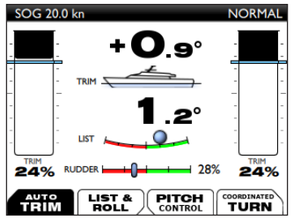
TCP: Swipe up or down the list and tap the button to the right of the curve.





3

The selected curve name is displayed in the upper right corner of the main screen on CP500-series when **AUTO TRIM** is turned on.



8. 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.

IMPORTANT!

IMPORTANT!

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

- RCU Orientation
- Trim/List Angle
- GPS

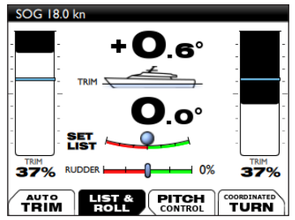
8.1 TURN ON LIST & ROLL CONTROL

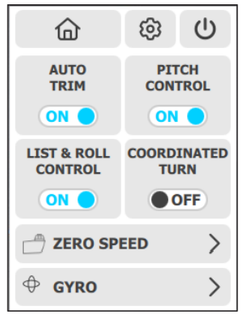
1

To turn on **LIST & ROLL CONTROL**:

CP500-series: Press the **LIST & ROLL** function key at the main screen.

TCP: Tap the **LIST & ROLL CONTROL** function in the main menu to toggle it on.





2

The **LIST** angle now indicates the **SET LIST** on the CP500-series main screen. **SET LIST** is the desired heel angle of the vessel. **SET LIST** is normally 0.0° to run on an even keel.

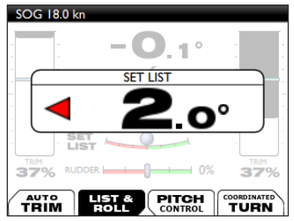
AUTO LIST is automatically activated when the speed exceeds a certain level. The **LIST & ROLL** function turns black at activation for CP500-series.

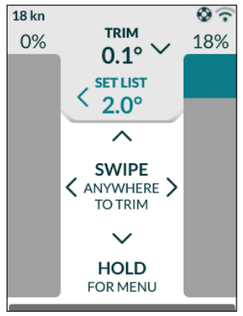
When **LIST & ROLL** is deactivated, the fins and interceptors return to their neutral position.

3 To manually set the desired **SET LIST** from port 4° to starboard 4°:

CP500-series: Use the **LIST** keys.

TCP: Swipe left or right in the main controls page.





NOTE!

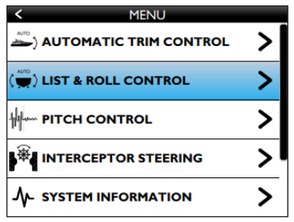
If the speed drops below 4 knots, the **SET LIST** automatically switches back to 0.0°. After a turn, **SET LIST** will also switch back to 0.0° to make sure that the vessel runs on an even keel.

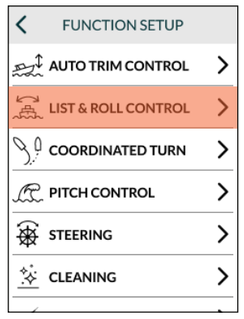
8.2 AUTO LIST SETTINGS

1 Go To:

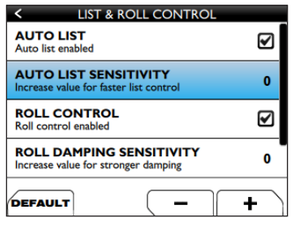
CP500-series: MAIN MENU → LIST & ROLL CONTROL

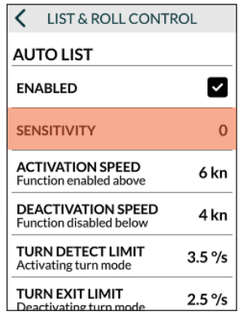
TCP: MAIN MENU → SETTINGS → FUNCTION SETUP → LIST & ROLL CONTROL





2 Increase the sensitivity for **AUTO LIST** for faster list control if the compensation appears too slow when the vessel enters a new load condition or wind angle. The sensitivity for **AUTO LIST** ranges from –20 to 10.





CP500-series: Select **AUTO LIST SENSITIVITY** with the **TRIM keys**.

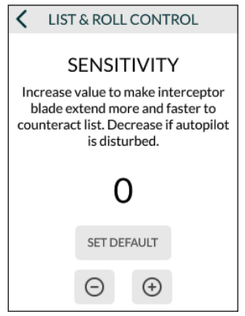
TCP: Tap **SENSITIVITY** for **AUTO LIST**.

3 To change the sensitivity for **AUTO LIST:**

CP500-series: Press the **PLUS/MINUS** function keys.

TCP: Tap **PLUS/MINUS**.

Default value: 0



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

CP500-series: Select **AUTO LIST** and press **OFF** at the **LIST & ROLL CONTROL** screen.
TCP: Tap the **ENABLED** checkbox for **AUTO LIST** on the **LIST & ROLL CONTROL** screen to clear it.

NOTE!

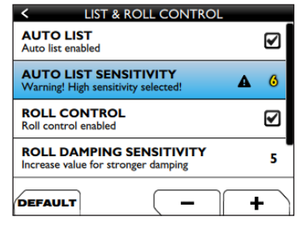
For **catamaran hulls**, it is recommended to exclude **AUTO LIST** from **LIST & ROLL**.

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 autopilot is not working correctly, try decreasing the **AUTO LIST** sensitivity until normal autopilot operation is restored. If it does not help to decrease the sensitivity, the autopilot 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.



8.3 ADVANCED AUTO LIST SETTINGS

The advanced settings for **AUTO LIST** are found in:

CP500-series: MAIN MENU → ADVANCED SETUP → AUTOMATIC LIST CONTROL
TCP: 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

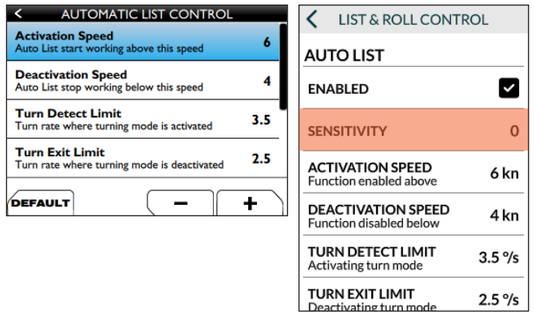
NOTE!
If the vessel is accelerating fast, it is not recommended to decrease the speed below the default settings.

CHANGE THE ACTIVATION SPEED OR DEACTIVATION SPEED

1 Select Activation Speed or Deactivation Speed:

CP500-series: Select Activation Speed or Deactivation Speed with the **TRIM keys**.

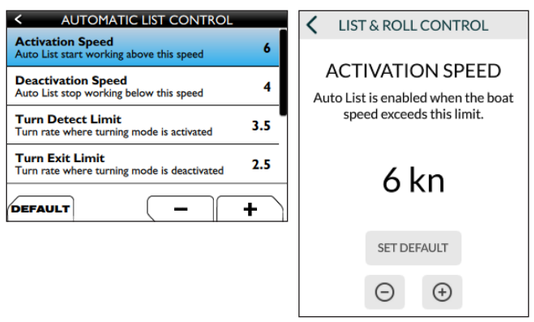
TCP: Tap **ACTIVATION SPEED** or **DEACTIVATION SPEED**.



2 Change Activation Speed or Deactivation Speed:

CP500-series: Press the **PLUS/MINUS** function keys.

TCP: Tap **PLUS/MINUS**.



TURN DETECT LIMIT AND TURN EXIT LIMIT

The interceptor system enters turning mode when the turn rate of the vessel exceeds the turn detect limit [degrees/s]. The Turning mode allows the vessel to heel inwards at tighter turns. If it feels like the vessel 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).

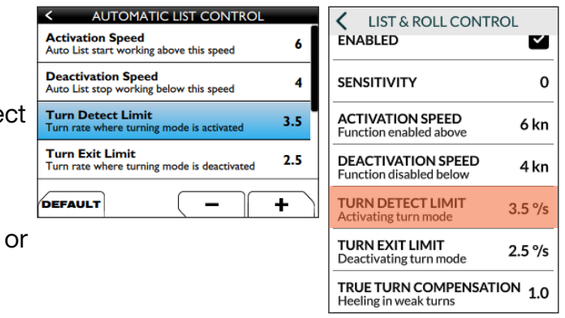
- The range of Turn Exit Limit is 0.5–24.5 degrees/s.
  Default value: 2.5 degrees/s (values above 10 available only to disable turning mode).

CHANGE THE TURN DETECT LIMIT OR TURN EXIT LIMIT VALUE

1 Select Turn Detect Limit or Turn Exit Limit:

CP500-series: Select Turn Detect Limit or Turn Exit Limit with the **TRIM keys**.

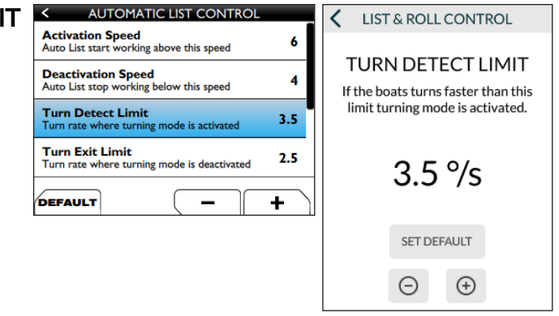
TCP: Tap **TURN DETECT LIMIT** or **TURN EXIT LIMIT**.



2 Change the T**URN DETECT LIMIT** or **TURN EXIT LIMIT** value:

CP500-series: Press the **PLUS/MINUS** function keys.

TCP: Tap **PLUS/MINUS**.



TRUE TURN COMPENSATION

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

- Default value: 1

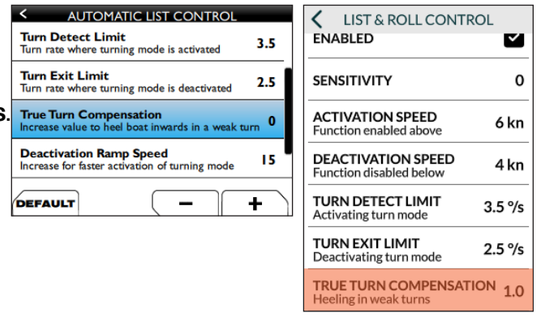
NOTE!
True Turn Compensation has no impact in sharper turns, when the turn rate has exceeded Turn Detect Limit.

CHANGE THE TRUE TURN COMPENSATION VALUE

1 Select True Turn Compensation:

CP500-series: Select True Turn Compensation with the **TRIM keys**.

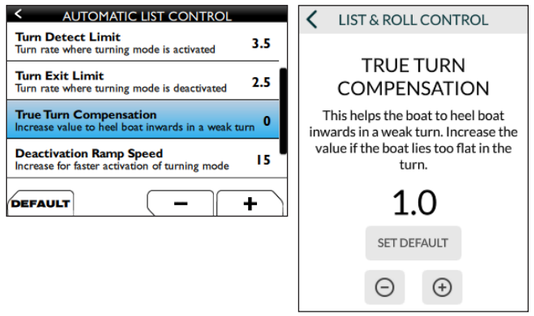
TCP: Tap **TRUE TURN COMPENSATION**.



2 Change the True Turn Compensation value:

CP500-series: Press the **PLUS/MINUS** function keys.

TCP: Tap **PLUS/MINUS**.



DEACTIVATION RAMP SPEED

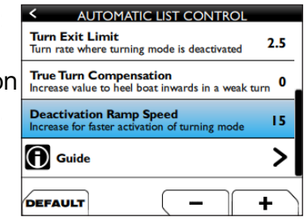
The activation of Turning Mode is controlled by this ramp time. The ramp time defines how fast the interceptors may move in percent per second when entering Turning Mode. For vessels with tight turning radius the value can be increased to enter turning mode faster. The range of Deactivation Ramp Speed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

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

CHANGE THE DEACTIVATION RAMP SPEED

1 Select Deactivation Ramp Speed:

CP500-series: Select Deactivation Ramp Speed with the **TRIM keys**.



2 Change the Deactivation Ramp Speed value:

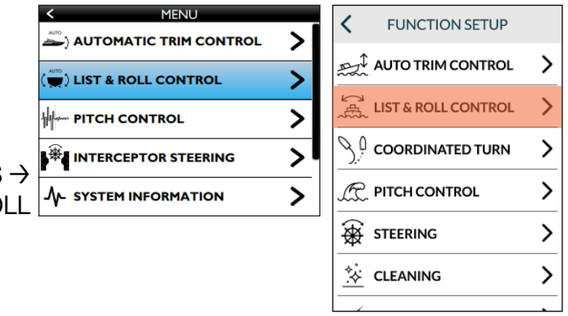
CP500-series: Press the **PLUS/MINUS** function keys.

8.4 ROLL CONTROL SETTINGS

1 Go to:

CP500-series: MAIN MENU → LIST & ROLL CONTROL

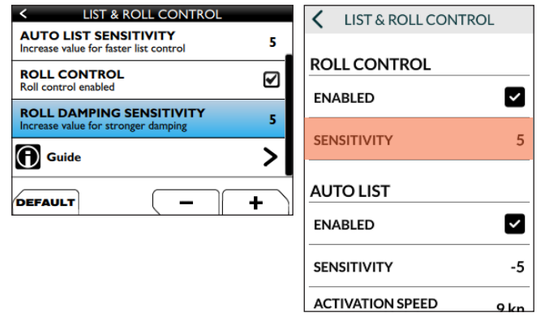
TCP: MAIN MENU → SETTINGS → FUNCTION SETUP → LIST & ROLL CONTROL



2 Increase the **ROLL DAMPING SENSITIVITY** (CP500-series) or the **ROLL CONTROL SENSITIVITY** (TCP) for stronger roll control. The sensitivity can be adjusted from –20 to +20.

CP500-series: Select **ROLL DAMPING SENSITIVITY** with the **TRIM** keys.

TCP: Tap **SENSITIVITY** for **ROLL CONTROL**.

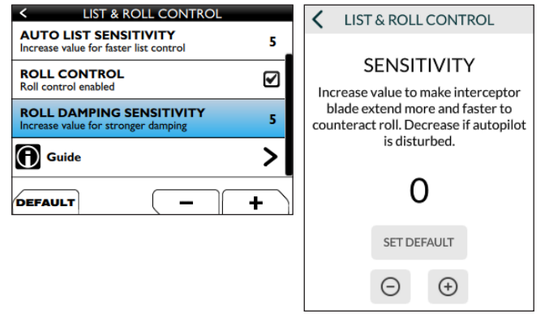


3 To change the sensitivity:

CP500-series: Press the **PLUS/MINUS** function keys.

TCP: Tap **PLUS/MINUS**.

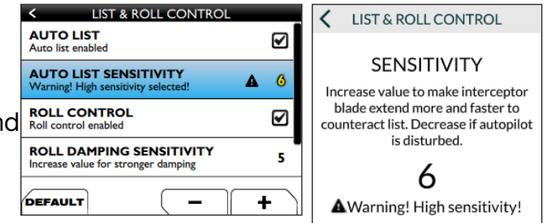
Default value: 0



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

CP500-series: Select **ROLL CONTROL** and press **OFF** at the **LIST & ROLL CONTROL** screen.
TCP: Tap the **ENABLED** checkbox for **ROLL CONTROL** on the **LIST & ROLL CONTROL** screen to clear it.

TIPS & TRICKS



- A low **ROLL DAMPING SENSITIVITY** (CP500-series) or **ROLL CONTROL SENSITIVITY** (TCP) 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 autopilot is not working correctly, try decreasing the **ROLL DAMPING SENSITIVITY** (CP500-series) or **ROLL CONTROL SENSITIVITY** (TCP) until normal autopilot operation is restored. If it does not help to decrease the sensitivity, the autopilot 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** (CP500-series) or **ROLL CONTROL SENSITIVITY** (TCP).

9. COORDINATED TURN

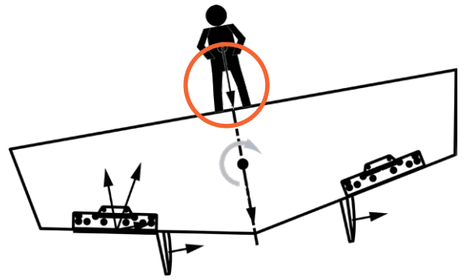
Coordinated Turn automatically adjusts the heeling angle of the vessel during turns to reduce the side forces for people on board. The vessel's turning ability is significantly improved as a result of the interceptor steering force. A rudder input bar is additionally shown on the main screen.

IMPORTANT!

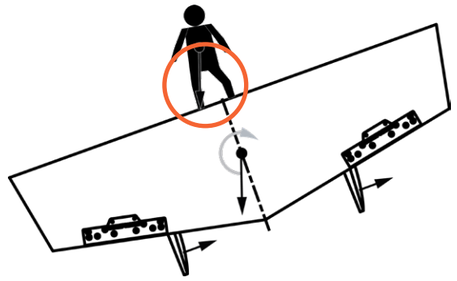
IMPORTANT!

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

- 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

NOTE!

- It is recommended to create Coordinated Turn curves for at least two different vessel speeds, for example 14 kn and 20 kn. If the speed capacity of the vessel is high, more input data is needed, especially for max speed. For speeds under 10 knots, set the gain* to 0 %.
- If speed (GPS) signal or the rudder input signal is lost, coordinated turn control is automatically switched off.

**How much the interceptor helps in the turn. Gain can be set to heel more inwards or outwards in the turn.*

9.1 SET COORDINATED TURN CURVE

A **COORDINATED TURN** curve can be manually set by recording the best turn conditions at different speeds.

IMPORTANT!

Run the vessel with constant throttle for best result.
Perform calibration in calm water with minimal current, wind, and tidal influence.

1. Make sure all **COORDINATED TURN** functions are turned off.

2. Set the vessel's speed to 12 knots.

3. Enter a full turn to either Port or Starboard.

4. Determine the interceptor deployment required to achieve optimum vessel turn or true turn by:

   CP500-series: Using the **TRIM** keys.

   TCP: Swiping left or right on the screen.

NOTE!

A true turn can be determined by placing one foot pointing to the bow and the other to the stern. If you do not tend to lean forward or backward during the turn, the vessel is close to a true turn.

5. Fill in Table 3 with the recorded data.

6. Increase the vessel's speed by 4 knots.

7. Repeat the steps 3-6 until at least two speeds have been recorded.

   If the speed capacity of the vessel is high, more input data is needed, especially for max speed.

SPEED (kn)	INTERCEPTOR DEPLOYMENT (%)*	GAIN (%)
12	E.g. 40	E.g. 40
16		
20		
24		
28		
32		
36		
etc.		

Table 3: Curve parameters for **COORDINATED TURN**
* If the interceptor deployment is on the opposite side of the vessels turn direction, enter the value with a minus sign.

9.1.1 CALCULATE GAIN VALUE

OPTION 1

USE ACTUAL INTERCEPTOR DEPLOYMENT VALUES

Enter the same values in the Gain (%) column as the measured interceptor deployment values from Table 3.

IMPORTANT!

Do not perform the following steps unless confirmed by a Humphree service technician or by a Humphree dealer.

OPTION 2

CHANGE INTERCEPTOR DEPLOYMENT SENSITIVITY

The **COORDINATED TURN** gain adjusts how aggressively interceptor deployment responds to rudder input. A higher gain causes the interceptor to deploy more aggressively in response to rudder input. The gain can be adjusted between –200 % and 200 %.

For example, a gain setting of 200 % causes full interceptor deployment when the rudder is only 50 % deflected.

1. Multiply each recorded interceptor deployment value (Table 3) by two to calculate the corresponding gain value to use in the COORDINATED TURN curve.

2. Fill in the multiplied value in the column Gain (%).

   For example, 40 % interceptor deployment at 100 % rudder corresponds to a gain value of 80 %. Meaning that the interceptor will deploy faster and reach the desired interceptor deployment at 50 % rudder input.

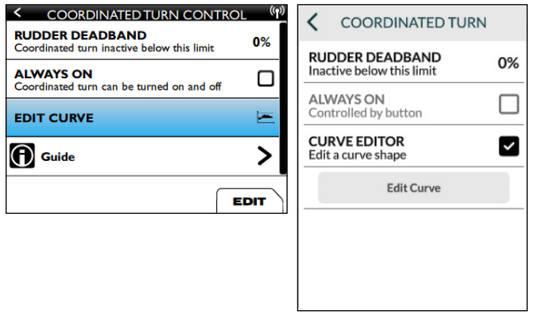
9.2 EDIT COORDINATED TURN CURVE

Perform the following steps after recording the data for manually setting the coordinated turn curve.

1 Go to and select:

CP500-series: ADVANCED SETUP → COORDINATED TURN → EDIT CURVE

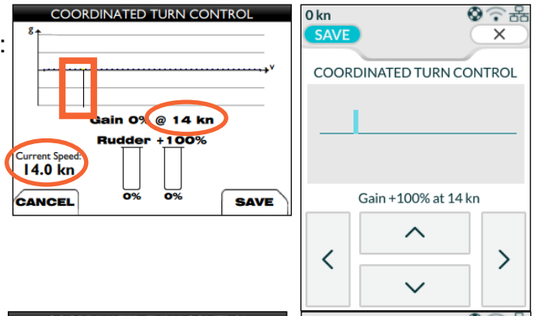
TCP: FUNCTION SETUP → COORDINATED TURN → EDIT CURVE



2 Select a speed from Table 3 to edit:

CP500-series: Use the **LIST** keys to move the cursor.

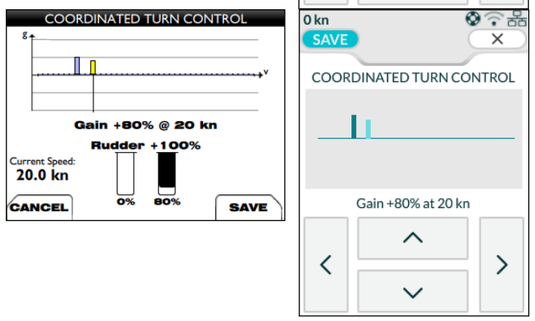
TCP: Use the left and right arrow buttons to move the cursor.



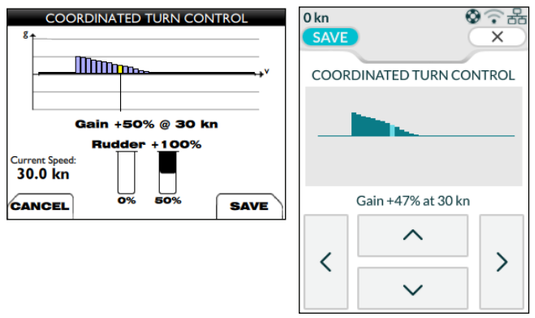
3 Enter the corresponding gain from Table 3.

CP500-series: Use the **TRIM** keys to change the gain for the current speed.

TCP: Use the up and down arrow buttons to change gain for the current speed.



4 Repeat the steps 2 to 3 until all measurements from Table 3 are entered.



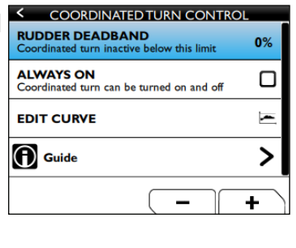
5 Even out the curve by allowing maximum 30 % difference between the speed columns.

6 Press **SAVE**.

7 Turn on **COORDINATED TURN** and test run the vessel toverify that the vessel's handling characteristics corresponds to desired operating conditions. Modify the curve if necessary.

9.2.1 RUDDER DEADBAND

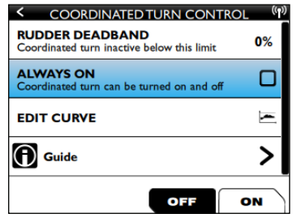
A **RUDDER DEADBAND** means that the **COORDINATED TURN** will not be activated until the rudder passes a set limit. For example, the deadband can be set to 30 %, that means that the **COORDINATED TURN** feature will not be activated until the captain turns the rudder more than 30 % to either port or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



10. PITCH CONTROL

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

IMPORTANT!

IMPORTANT!

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

- RCU Orientation
- Trim/List Angle
- GPS

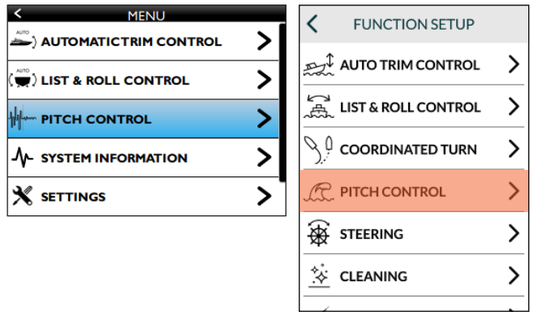
10.1 PITCH CONTROL SETTINGS

1

Go to:

CP500-series: MAIN MENU → PITCH CONTROL

TCP: MAIN MENU → SETTINGS → FUNCTION SETUP → PITCH CONTROL

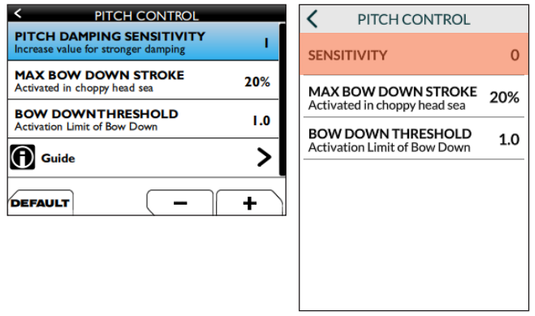


2

Increase the **PITCH DAMPING SENSITIVITY** (CP500-series) or **PITCH CONTROL SENSITIVITY** (TCP) for stronger pitch control. The sensitivity ranges from –20 to +20.

CP500-series: Select **PITCH DAMPING SENSITIVITY** with the **TRIM** keys.

TCP: Tap **SENSITIVITY** for **PITCH CONTROL**.



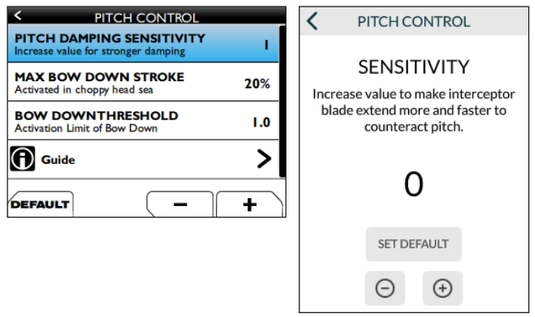
3

To change the sensitivity:

CP500-series: Press the **PLUS/MINUS** function keys.

TCP: Tap **PLUS/MINUS**.

Default value: 0



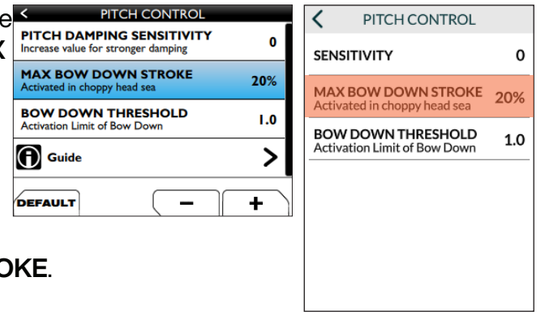
4

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

CP500-series: Select **MAX BOW DOWN STROKE** with the **TRIM keys**.

TCP: 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.



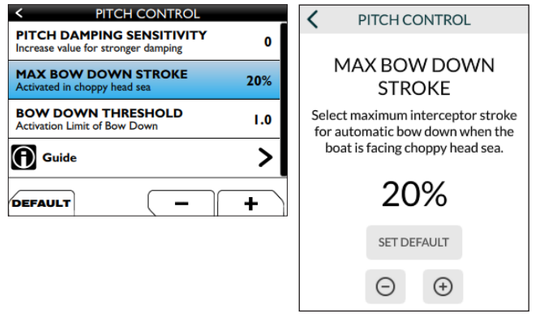
5

To change the **MAX BOW DOWN STROKE**:

CP500-series: Press the **PLUS/MINUS** function keys.

TCP: Tap **PLUS/MINUS**.

Default value: 20 %

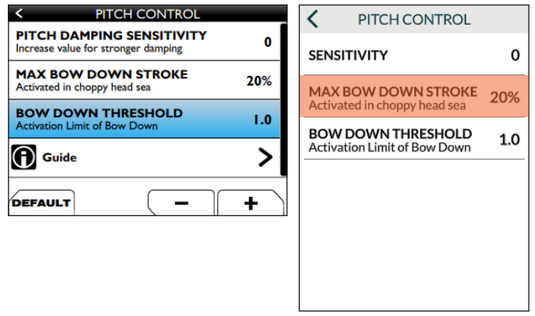


6

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.

CP500-series: Select **BOW DOWN THRESHOLD**.

TCP: Tap **BOW DOWN THRESHOLD**.

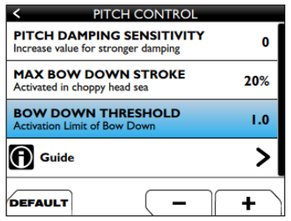


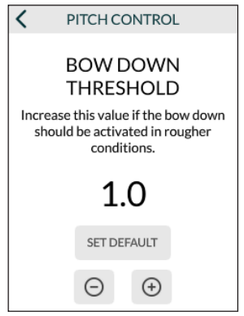
7 To change the **BOW DOWN THRESHOLD**:

CP500-series: Press the **PLUS/MINUS** function keys.

TCP: Tap **PLUS/MINUS**.

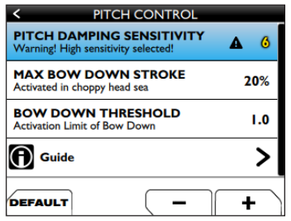
Default value: 1.0





TIPS & TRICKS

- If the strongest possible pitch damping is preferred, increase the **PITCH DAMPING SENSITIVITY** (CP500-series) or **PITCH CONTROL SENSITIVITY** (TCP) and go to MAIN MENU → LIST & ROLL CONTROL (CP500-series) or MAIN MENU → SETTINGS → FUNCTION SETUP → LIST & ROLL CONTROL and exclude ROLL CONTROL from LIST & ROLL.
- The system warns when the sensitivity exceeds 5.



11. INTERCEPTOR STEERING

IMPORTANT!

IMPORTANT!

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

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

11.1 SET INTERCEPTOR STEERING CURVE

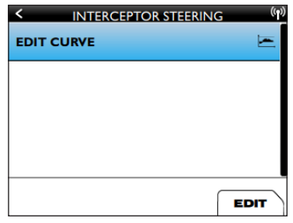
NOTE!

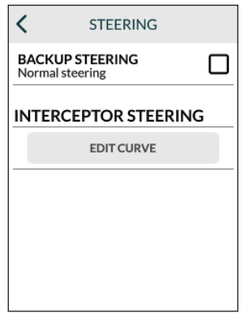
The following curve is created with example values.

1 Go to:

CP500-series: MAIN MENU → ADVANCED SETUP → INTERCEPTOR STEERING

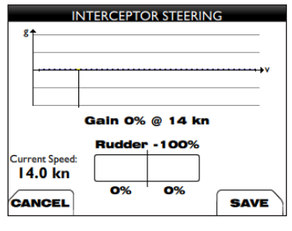
TCP: FUNCTION SETUP → INTERCEPTOR STEERING

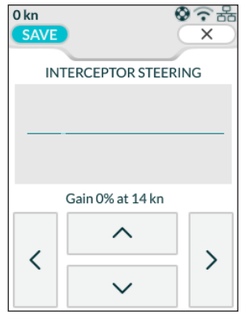




2 Enter curve edit mode.

3 Cruise at a desired speed.



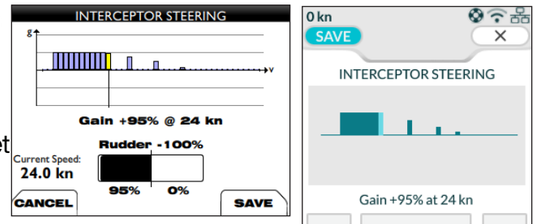


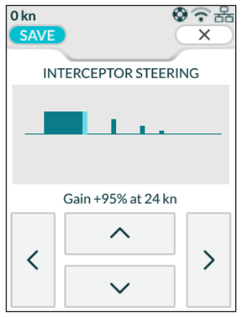
4 **CP500-series**: Use the **LIST** keys to place the cursor at the same speed as the vessel.

TCP: Use left/right button to place the cursor at the same speed as the vessel.

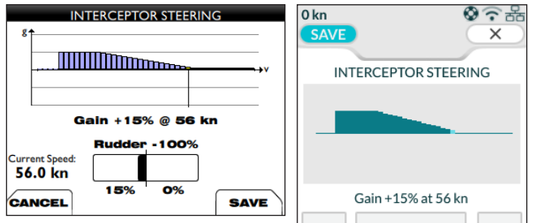
5 **CP500-series**: Use the **TRIM** keys to set the effect of the interceptor steering.

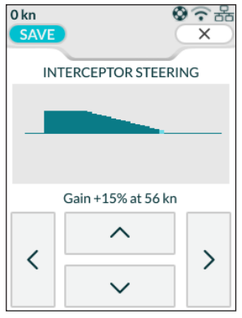
TCP: Use the up/down button to set the effect of the interceptor steering.





6 Repeat the steps 3 to 6 with a different speed (if the vessel allows a speed that high).





7 Even out the curve between the different speeds.

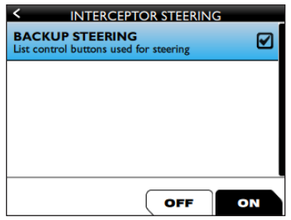
8 Press **SAVE**.

11.2 BACKUP STEERING

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

1 Go to:

CP500-series: MAIN MENU → ADVANCED SETUP → INTERCEPTOR STEERING



2 Turn on backup steering:

CP500-series: Tick the B**ACKUP STEERING** box.

3 **CP500-series**: 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.

11.3 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/autopilot 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.

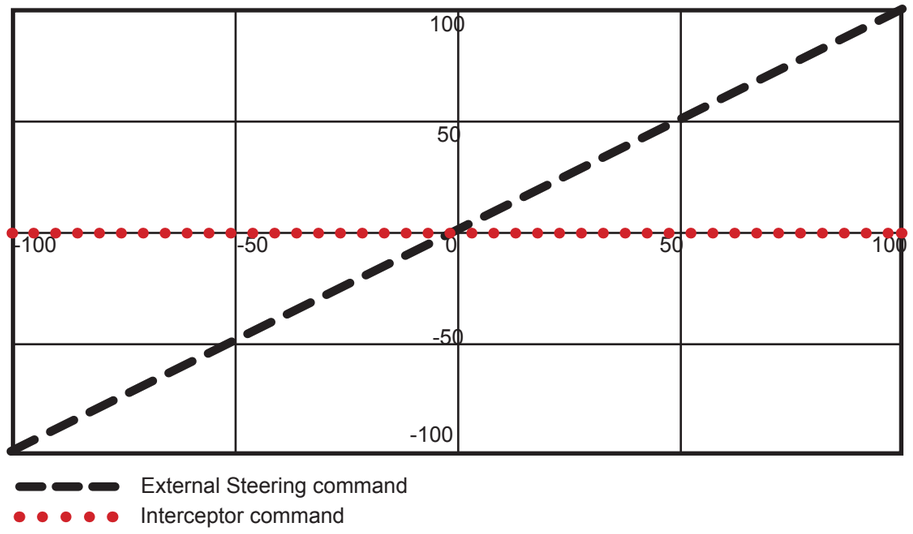
- Humphree Interceptor Steering up to 50 % of steering wheel/autopilot command.
- More than 50 % of steering wheel/autopilot command the Main Steering is also used.

Speed above 40 knots.

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

11.4 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:

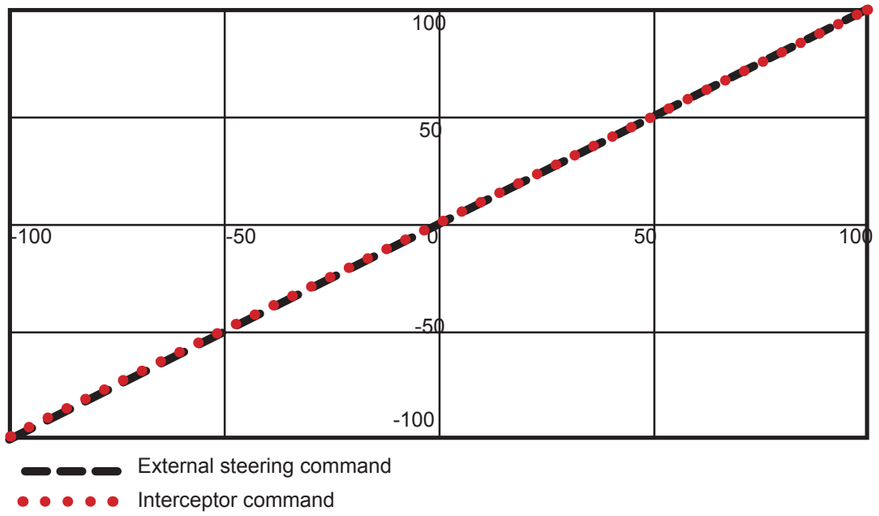


GRAPH 1. THE INTERCEPTOR STEERING COMMAND IS IN THE DEADBAND BELOW V1.

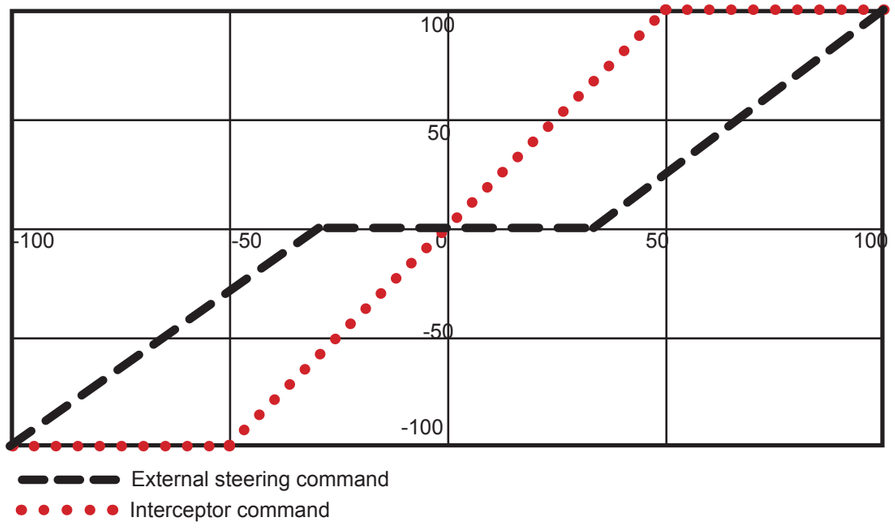
When the interceptors start to be effective, it is possible to command them in two different ways.

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.

12. VESSEL MOTION MONITORING

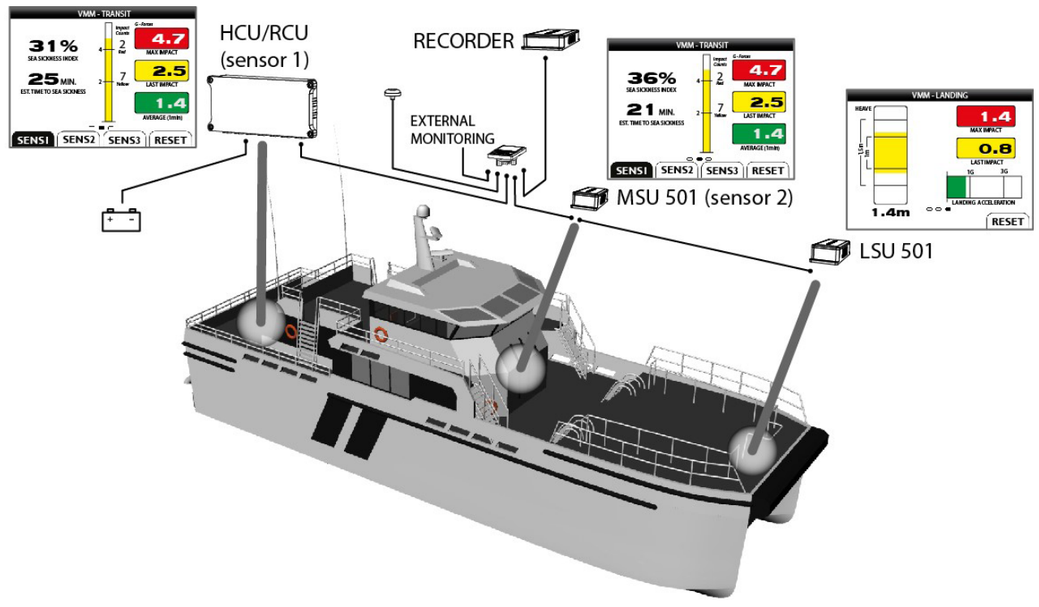
Vessel Motion Monitoring (VMM) is used to monitor impacts and motion sickness when the vessel is moving. The sensors in the RCU measure 3D accelerations and present live data on the display. On the VMM screen, there is a yellow and a red warning level for the acceleration impacts. The warning levels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

IMPORTANT!

IMPORTANT!

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

- RCU Orientation
- Trim/List Angle
- GPS



IMPORTANT!

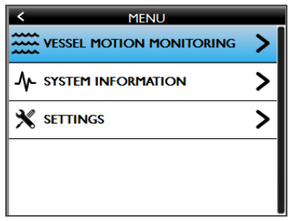
IMPORTANT!

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

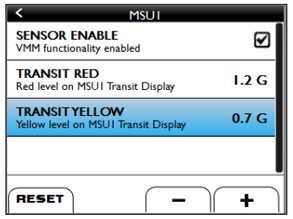
12.1 SET WARNING LEVELS ON VMM

1 Go to:

CP500-series: MAIN MENU → VESSEL MOTION MONITORING

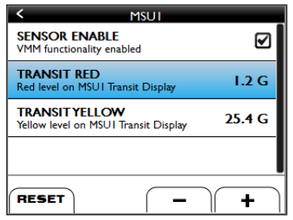


2 **CP500-series**: Scroll down to **TRANSIT RED** and press **RESET**.



3 To adjust the desired red warning level for acceleration impacts:

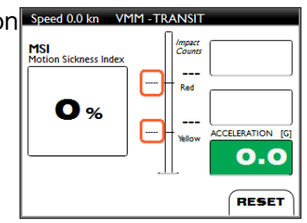
CP500-series: Use the **PLUS/MINUS** keys.



4 **CP500-series**: Scroll down to **TRANSIT YELLOW** and press **RESET**.

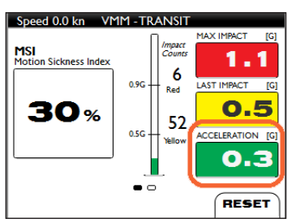
5 To adjust the desired yellow warning level for acceleration impacts:

CP500-series: Use the **PLUS/MINUS** keys.



NOTE!
Unadjusted warning levels are indicated as dotted lines.

6 **CP500-series**: The warning levels are now displayed on the Vessel Motion Monitoring screen.



13. ADVANCED SETUP

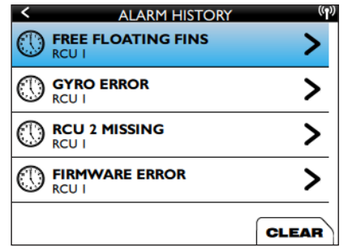
13.1 ADVANCED SETUP ON CP500-SERIES

The following menus are found in MAIN MENU → ADVANCED SETUP on the CP500-series:

- 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

13.1.1 ALARM HISTORY

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



13.1.2 WI-FI HOTSPOT

Only used by Humphree technicians.

13.1.3 HUMPHREE REMOTE SUPPORT

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

IMPORTANT!
IMPORTANT!
Do not perform the following steps unless confirmed by a Humphree service technician.

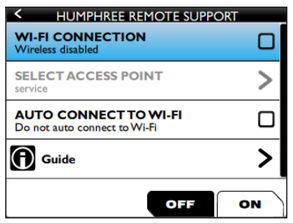
1 Go to MAIN MENU → ADVANCED SETUP → HUMPHREE REMOTE SUPPORT.

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.

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

Example for orientation setting 0:

IMPORTANT!

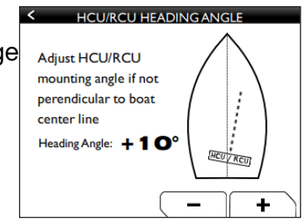
IMPORTANT!
Incorrect Heading Angle will lead to sensor malfunctions in the Humphree system.

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.

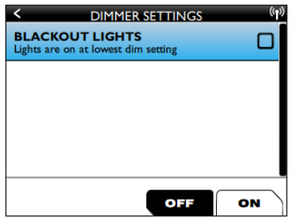
3 Go to MAIN MENU → ADVANCED SETUP → SENSOR CALIBRATION → RCU 1 HEADING ANGLE.

4 Press the **PLUS** function key to change the heading angle to starboard or the **MINUS** function key to change the heading angle to port.



5 Press the **LIST** port key to save and exit.

13.1.5 DIMMER
Tick the **BLACKOUT LIGHTS** box to remove the light behind the function keys and on the screen. The screen will still be visible but without the backlight.



13.1.6 MEASUREMENT

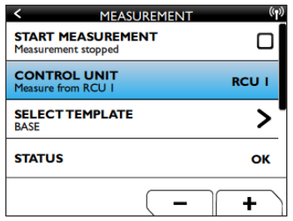
Measurement is used when a Humphree service technician wants to perform different types of measurements on the system.

IMPORTANT!

IMPORTANT!
Do not perform the following steps unless confirmed by a Humphree service technician.

1 Go to MAIN MENU → ADVANCED SETUP → MEASUREMENT.

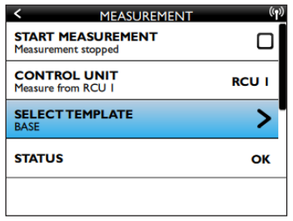
2 Select the control unit to perform the measurements on.



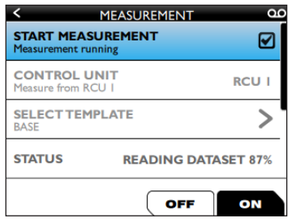
3 Select a template:

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

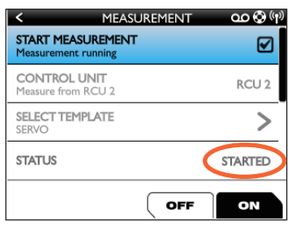
SERVO is used to troubleshoot servo problems.



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!
Wi-Fi connection is required.

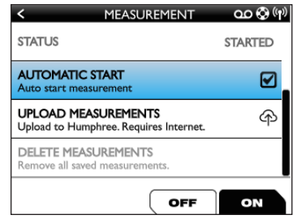
AUTOMATIC MEASUREMENTS

If the vessel has problems, automatic measurements can be used to record vessel data that can later be reviewed by a Humphree service technician.

IMPORTANT!

IMPORTANT!
Automatic measurements must only be used by request from a Humphree service technician. The memory can get full if automatic measurements are always enabled.

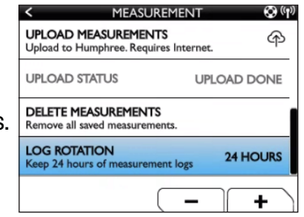
1 Tick the **AUTOMATIC START** box before departure.

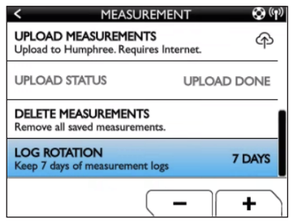


2 Go to **LOG ROTATION** and select the duration of the measurement.

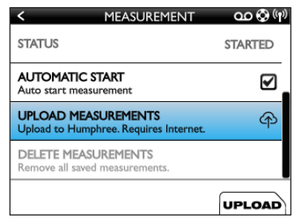
The **LOG ROTATION** range is from 24 hours up to 7 days.

The data will be collected while using the vessel.



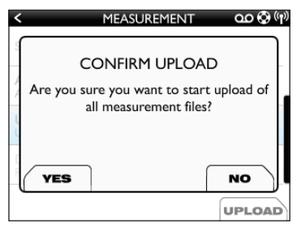


3 When enough data is collected, go to **UPLOAD MEASUREMENTS.**

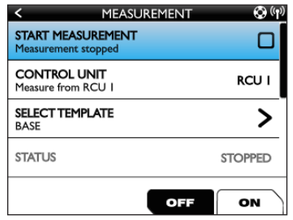


4 Press **UPLOAD**.

5 Press **YES** to confirm.



6 When the upload is **DONE**, go to **START MEASUREMENT** and untick the **START MEASUREMENT** box.

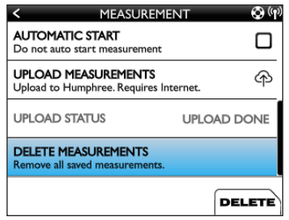


7 Go to **AUTOMATIC START** and untick the **AUTOMATIC START** box.

IMPORTANT!

IMPORTANT!
Unless a Humphree service technician has instructed, keep the **AUTOMATIC START** box unticked.

8 Go to **DELETE MEASUREMENTS**.



9 Press **DELETE**.

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

13.1.7 SIMULATION

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

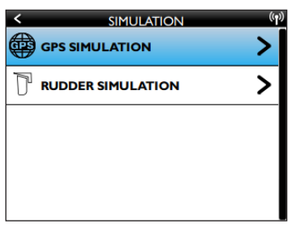
IMPORTANT!

IMPORTANT!
Do not perform the following steps unless confirmed by a Humphree service technician.

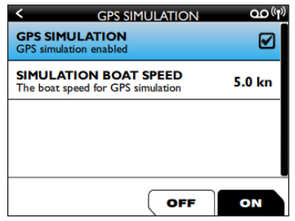
GPS SIMULATION

1 Go to MAIN MENU → ADVANCED SETUP → SIMULATION.

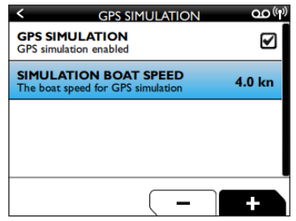
2 Select **GPS SIMULATION**.



3 Tick the **GPS SIMULATION** box by pressing **ON**.



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

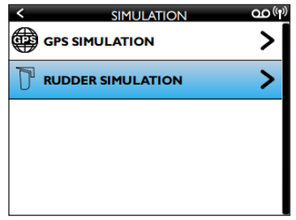


RUDDER SIMULATION

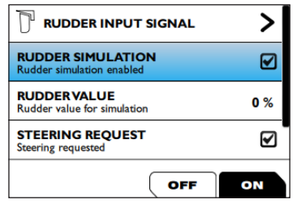
The rudder simulation can be done no matter what rudder input source is used on the system.

1 Go to MAIN MENU → ADVANCED SETUP → SIMULATION.

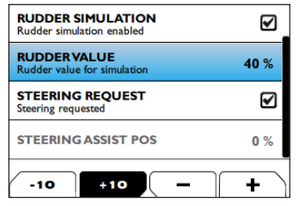
2 Select **RUDDER SIMULATION**.



3 Tick the **RUDDER SIMULATION** box by pressing **ON**.



4 Go to **RUDDER VALUE**.



5 Use the function keys to adjust the rudder simulation.

13.2 ADVANCED SETUP ON TCP

The following menus are found in MAIN MENU → SETTINGS → ADVANCED on the TCP:

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

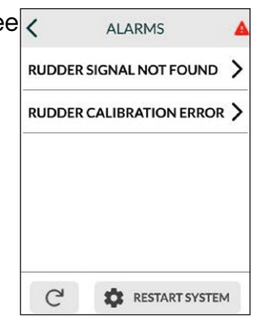
13.2.1 ALARMS

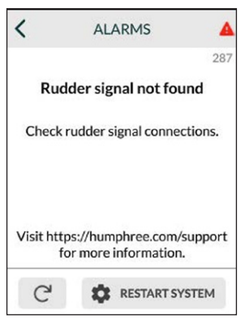
To view the list of active alarms:

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

2 For more information, tap an alarm. See chapter **TROUBLESHOOTING** in the *Operator Manual* for information on how to clear the alarms.

Tap the refresh button to update the list. **RESTART SYSTEM** will not clear the list, but can solve the problem.





13.2.2 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.

13.2.3 GPS SIMULATION

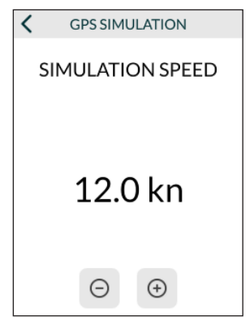
It is possible to simulate the vessel's speed to test system functions.

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

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

3 Tap the **SIMULATION SPEED**.

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

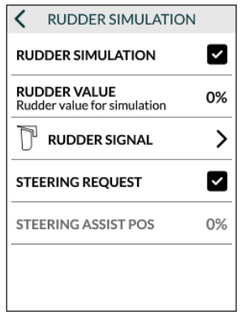


13.2.4 RUDDER SIMULATION

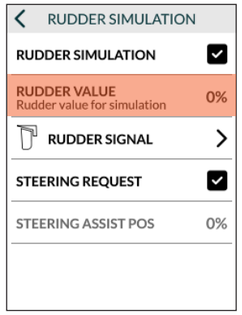
It is possible to simulate the rudder positioning to test system functions.

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

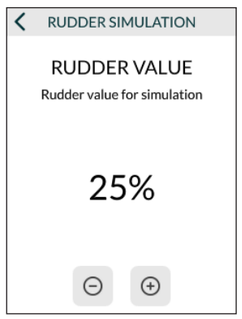
2 Tap the **RUDDER SIMULATION** box to turn on the rudder simulation.



3 Tap the **RUDDER VALUE**.



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



13.2.5 MISCELLANEOUS

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

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NOTES

NOTES