MARPORT | PRO

2024

CATCH NAVIGATOR

USER MANUAL

PUBLISHED 17TH DECEMBER 2024

Contents

Legal

History

V1	12/30/22	First release
V2	02/26/24	• Updated guidelines on the detection threshold settings in **Configuring the Echo Sounder (on page 26)**.
V3	12/17/24	• Added Mjolnir Small bottle model in instructions. • Added guidance on the compatibility with Marport legacy chargers in **Firmware and Features (on page 9)** and **Sensor is not charging with the Medusa or Basic Marport legacy charger (on page 70)**. • Added estimated battery lifetime according to refresh rate in the technical specifications: **Technical Specifications (on page 10)**. • Added guidance on the refresh rate setting of the uplink signal via Mosa2 in **Configuring the Uplink Frequency and Power (on page 24)**. • Added number of channels used by the sensor in instructions to add the sensor to the receiver: **Adding the Sensor to the Receiver (on page 41)**.

Copyright

Disclaimer

Marport endeavors to ensure that all information in this document is correct and fairly stated, but does not accept liability for any errors or omissions.

The present user guide is applicable for the following versions:

- Mosa2: 02.11.x
- Scala2: 02.14.x

Introduction & Presentation

Introduction and Presentation

Get a basic knowledge of the sensor.

Introduction

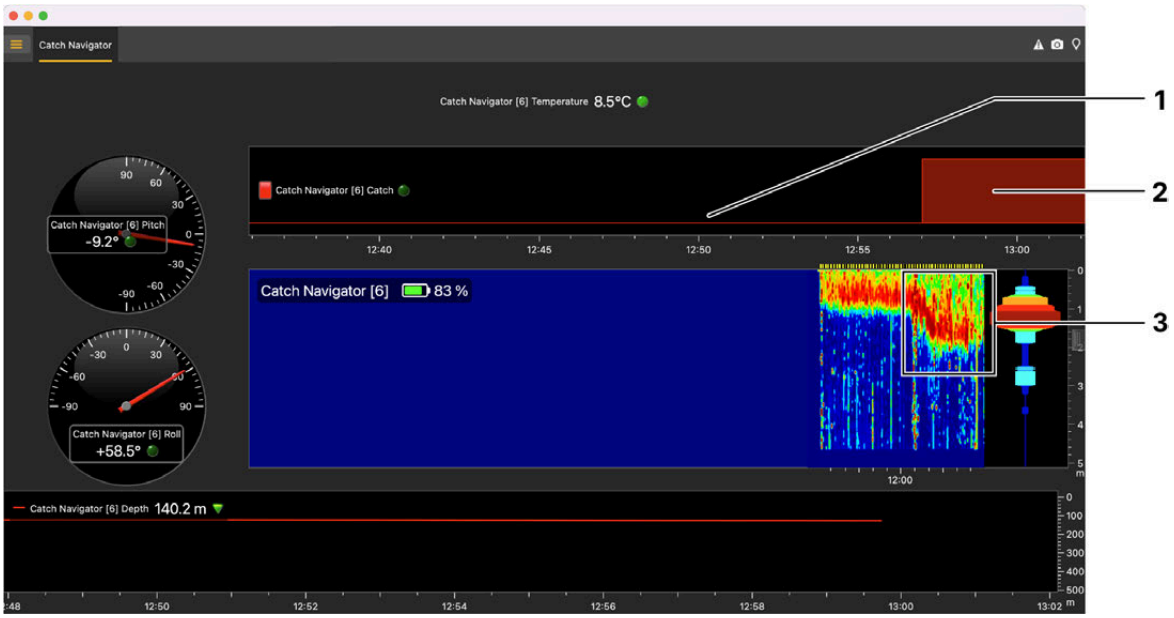
Marport's Catch Navigator tells you when your trawl starts to fill. Placed on the top of the trawl codend, it monitors the amount of catch that you have and warns you when the trawl is full. You can even use it to determine a precise amount of fish inside the trawl net. This way, you can monitor the contents of the codend while you are fishing, avoid problems of overfilling and increase fish survival rate inside the trawl net. It is recommended to install several sensors along the trawl to better monitor the filling processes.

The Catch Navigator provides a high-definition echogram image of the volume of catch inside the codend. In order to efficiently follow the trawl descent, echogram ranges are configurable from 5 to 160 meters. Moreover, the sensor includes an automatic range mode: when descending, the sensor can automatically switch to a lower range of 20 meters to get sharper pictures. Optionally, it can also track pitch, roll, depth, height and temperature data.

Our latest model offers enhanced robustness, extended battery life, and a convenient swap-out design, making it more reliable and easier to use.

Applications

Examples of data received and displayed in Scala2 application.



1. Catch status: empty / **2.** Catch status: full / **3.** The echogram shows the codend filling up, until the catch sensor is triggered.

Safety Guidelines

Important: To ensure proper and safe use of this equipment, carefully read and follow the instructions in this manual.

Description

System Compatibility

The Catch Navigator is compatible with the following versions of Marport's software and equipment.

Mosa2	02.11.12 or later
Scala2	02.10.04 or later
Mx receiver firmware	08.05.05 or later
Dock	01.01.01 or later

Firmware and Features

This section describes the firmware and features that must be configured on MASP to set up the sensor.

To be operational, the sensor needs to be configured with two files:

- a firmware file (*.A2F): it is the firmware of the sensor,
- an application file (*.A2A): it defines the sensor features and options.

These files are generated via MASP.

Firmware

The latest version of the firmware is available for download on MASP.

Compatibility:

- Small: F450-02.02.02 and after
- Mjolnir Small: F450-02.03.04 and after

Features and Options

The features and options are configurable according to the type of hardware and customer's choices.

Features	• **Product name**: Manually entered. • **Application**: Catch Navigator • **Body**: Small / Mjolnir • **Battery capacity** (not configurable): ◦ Body Small: 1-pack ◦ Body Mjolnir: 2-pack
Sounding Options	• Down • Down2
Misc. options	• **Memory Card Log**: records a log of the sensor activity. This option is useful for troubleshooting support. • High Resolution (always activated) • Legacy Charger Compat.*
Measures	• Battery (always activated) • Catch (always activated) • Pressure (depth) • Temperature • Pitch • Roll • Height

*Legacy Charger Compatibility option: compatible only with sensor firmware version **F450-02.03.01 or later**.

Technical Specifications

Uplink frequency	30 to 60 kHz
Range to vessel	up to 2500 m[1]
Sounder broadband frequency	• Small: 360 kHz • Mjolnir Small: 210 kHz
Data update rate	• 5-meter range: Echogram @0.75 s - temperature, depth, pitch, roll, battery level, catch @5.24 s • 10-meter range: Echogram @0.91 s - temperature, depth, pitch, roll, battery level, catch @6.39 s

	• 20-meter range: Echogram @1.24 s - temperature, depth, pitch, roll, battery level, catch @8.69 s • 40-meter range: Echogram @1.00 s - temperature, depth, pitch, roll, battery level, catch @7.00 s • 80-meter range: Echogram @1.26 s - temperature, depth, pitch, roll, battery level, catch @8.85 s • 160-meter range: Echogram @1.79 s - temperature, depth, pitch, roll, battery level, catch @12.53 s
Depth range	up to 1800 m
Depth resolution	0.1 m with 0.1% full scale accuracy
Echogram range	20 (auto) / 40 / 80 / 160 meters
Pitch and roll range	-180° to +180°
Pitch & roll accuracy	+/- 1°
Temp measurement range	-5° C to +25° C
Temp accuracy	±0.1° C
Typical battery life[2]	Small: • Slow refresh rate: 7 days • Medium refresh rate: 2,5 days • Fast refresh rate: 1 day Mjolnir Small: • Slow refresh rate: 14 days • Medium refresh rate: 5 days • Fast refresh rate: 2 day
Charging time (from 0% to 100%)[3]	2 hours
Battery type	Lithium-Ion
Warranty	2 years (Sensor & Battery)[4]

1. Reference only, depends on functions enabled. / 2. Depends on sensor uplink power and options. / 3. Based on average charging time. / 4. Marport Standard Marine Limited Warranty

Beamwidths

Beamwidths for Uplink pings

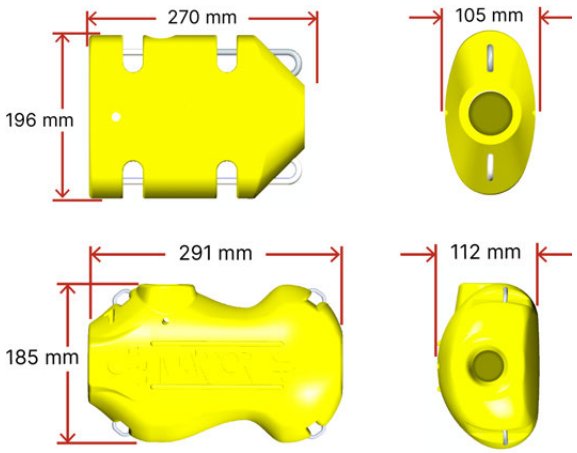
Beamwidth	@ 35 kHz	@ 50 kHz	@ 60 kHz
-3dB	46°	40°	30°

Beamwidths for Down pings

	-3dB
Small **@ 360 kHz**	13°
Mjolnir Small **@ 210 kHz**	20°

Dimensions and Weight

Small - Available in different housing versions.



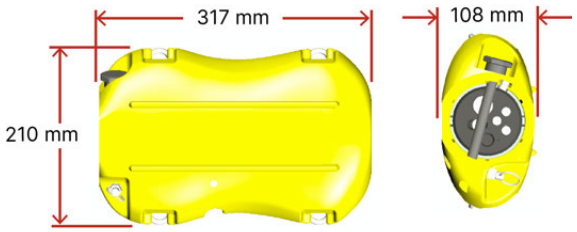
Weight in air: 5 kg

Weight in water: 0.9 kg

Weight in air: 5.5 kg

Weight in water: 1.6 kg

Mjolnir Small



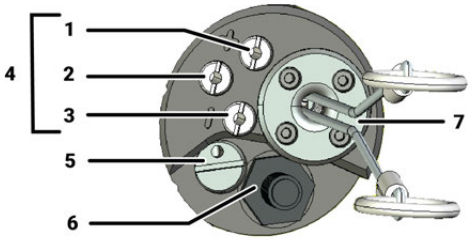
Weight in air: 7 kg

Weight in water: 2.4 kg

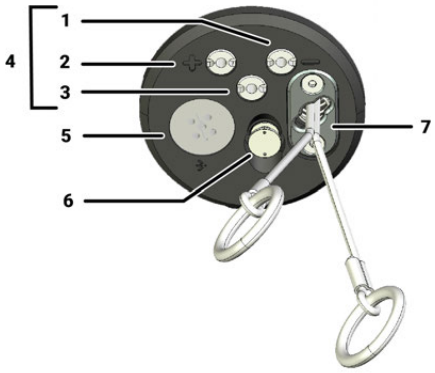
Main Parts

External View

Small

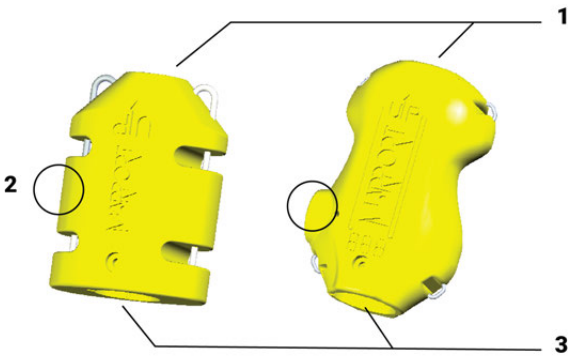


Mjolnir Small

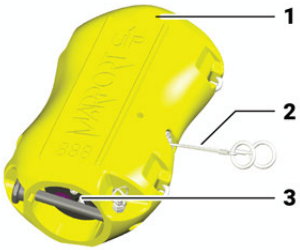


1. Negative charge
2. Positive charge
3. Water switch
4. Shoulder bolts
5. Pressure sensor
6. Temperature sensor
7. Pull cords (center-pull)

Small



Mjolnir Small



1. Transducer
2. Pull cords (side-pull)
3. End cap

To know how to remove the sensor from its housing, see **Removing the Sensor from the Mjolnir Small Housing (on page 51)**.

CAUTION:

- Do not put foreign objects into pressure sensor opening or try to open it.
- Do not remove the shoulder bolts from the outside of the sensor.

It may damage the components.

Operational Mode Indicator

A LED on the sensor's transducer indicates the operational mode of the sensor.

State	Situation	LED
Starting	• Sensor has been switched on in water or with water switch.	 • Startup sequence: LED blinks green/off/red/off/green/red. • Then, fixed green for 1 sec.
Running	• Sensor is in water. • Water switch is on.	 • For 1 min.: LED blinks red at the beginning of each uplink communication cycle. • Or, LED blinks green / red if the product configuration is not valid.
Configuring	• Sensor is out of water. • User is testing and configuring using a Configuration Cable. • Sensor turns off after 10 min. without test or configuration operation.	 LED blinks green.
Charging	• Charger plug is connected. • User is configuring at the same time via the Dock.	 • LED blinks red. • If connected to an incompatible charger and not charging, the LED stops blinking after approx. 10 sec.
On deck	• Sensor has been hauled on deck. • The virtual water switch is on. • The sensor is locked in a low power state to not switch into running mode.	 LED blinks green every 4 sec.

Sensor Configuration

Sensor Configuration

Learn how to configure the sensor settings.

Note: To configure the sensor on Mosa2: Press command + A or click **Menu** and click **User Mode > Advanced**.

Connecting the Sensor to Mosa2

To configure the sensor, you need to connect it to Mosa2 application, using either the Dock or the Configuration Cable.

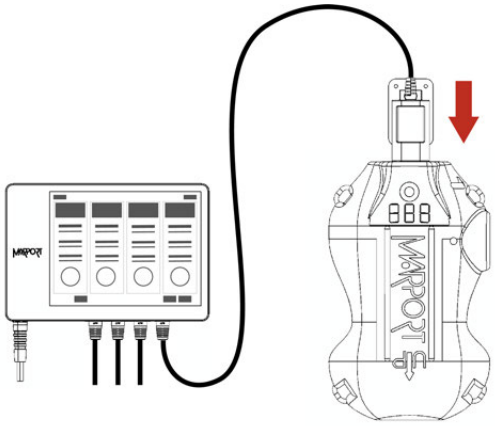
Using a Dock Charger Plug

About this task

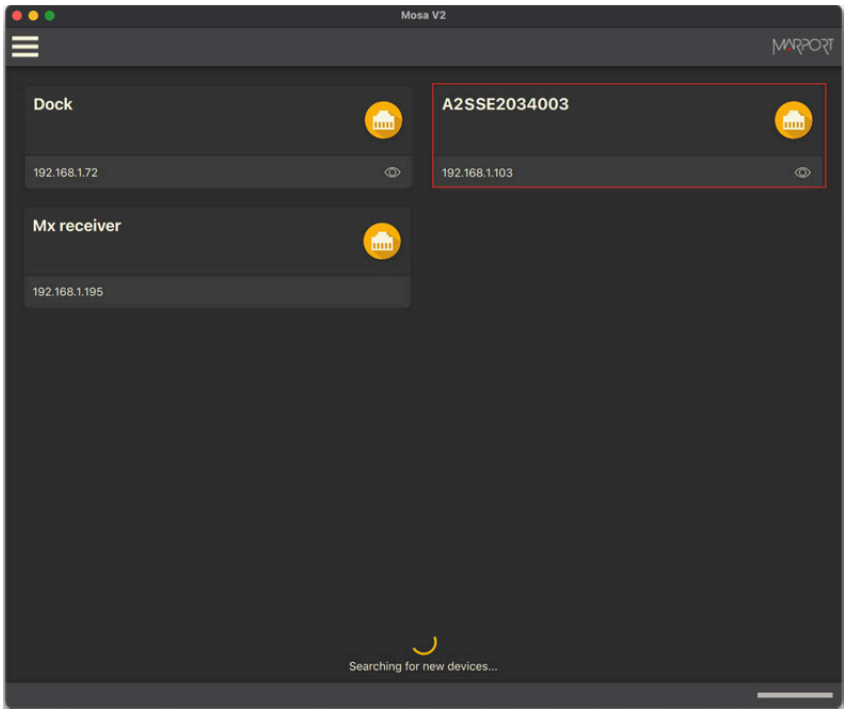
Tip: Refer to Dock user manual to have more details about the use of this product.

Procedure

1. Connect one Dock charging plug to the sensor's endcap.



2. Mosa2 discovery page opens. The sensor is displayed.



- Click  to open the sensor configuration page.
- Click  to show the deploy animation on the charger plug for 30 seconds.

Using the Configuration Cable

Connect the Configuration Cable from the computer to the sensor to display the sensor configuration page on Mosa2.

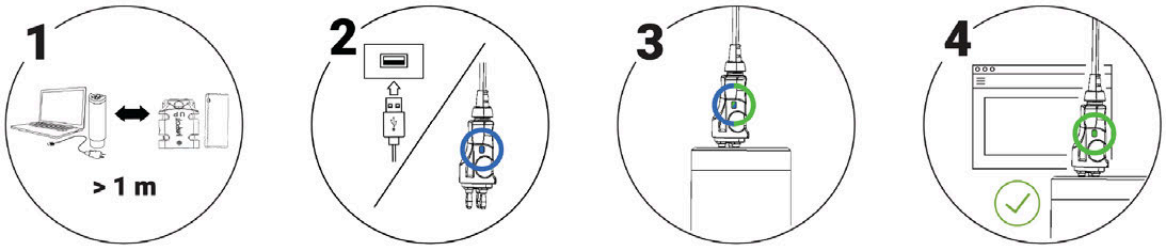
About this task

Tip: Refer to the Configuration Cable Quick Reference Guide available on our website for more details about the use of this product.

Procedure

1. Move other electrical devices minimum 1 m away from the computer.
2. Connect the USB connector directly to the computer.
   Mosa2 opens automatically and the startup wizard is displayed. The LED on the plug is solid blue.
3. Connect the three-pin plug to the sensor.
   The LED on the plug blinks alternatively blue and green.
4. Wait a few seconds. The configuration page of the sensor is displayed on Mosa2.
   The LED on the plug is solid green.

Example



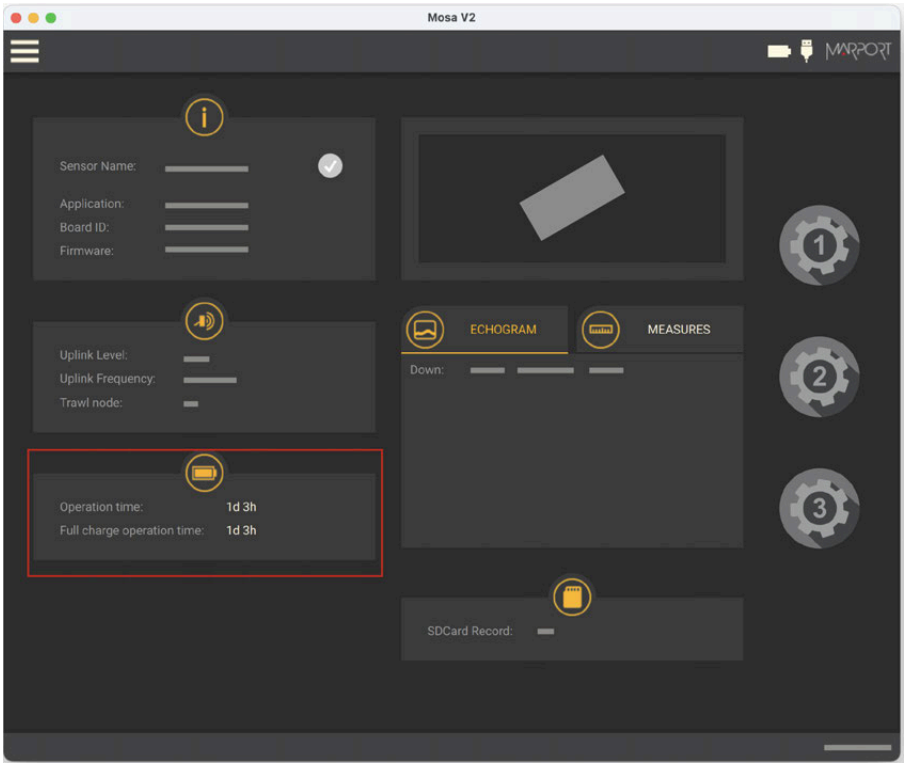
What to do next

You can now configure the sensor.

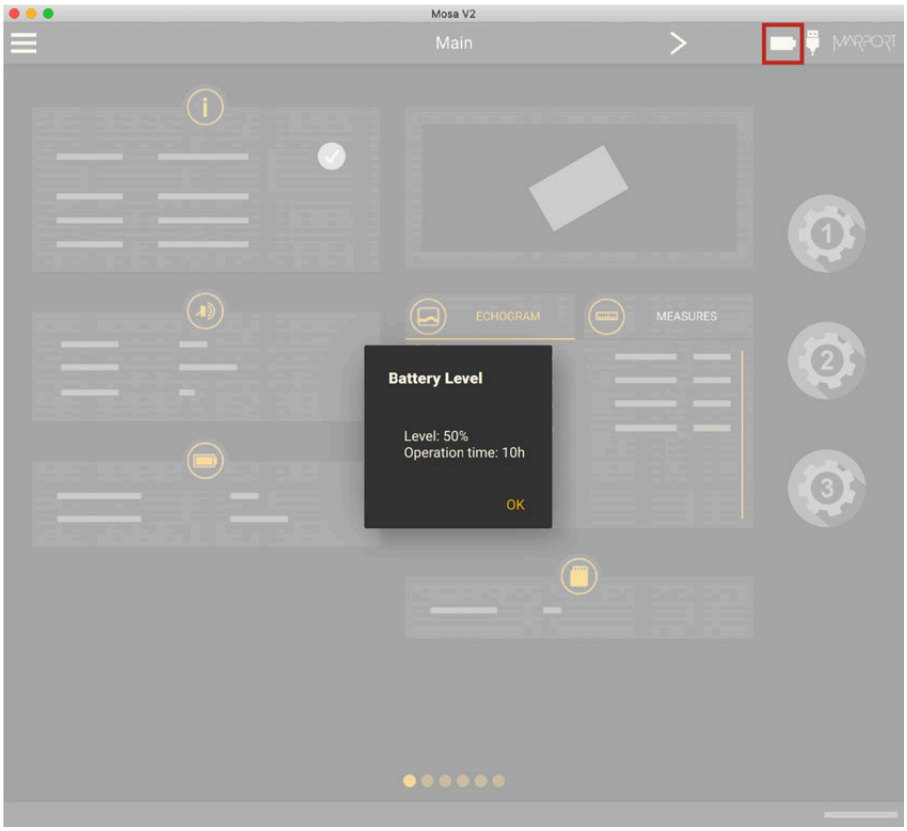
Note: You can keep the Configuration Cable continuously connected by USB, and virtually eject or connect it. When no sensor is connected to the Configuration Cable, click **Menu** **> Eject Config Plug** or **Connect Config Plug**. When ejected, you come back to the discovery page. It stays disconnected until you virtually connect to it or manually disconnect then connect it.

Battery Information

The battery lifetime is displayed on the first page.



You can also check the battery level at anytime from the top bar:

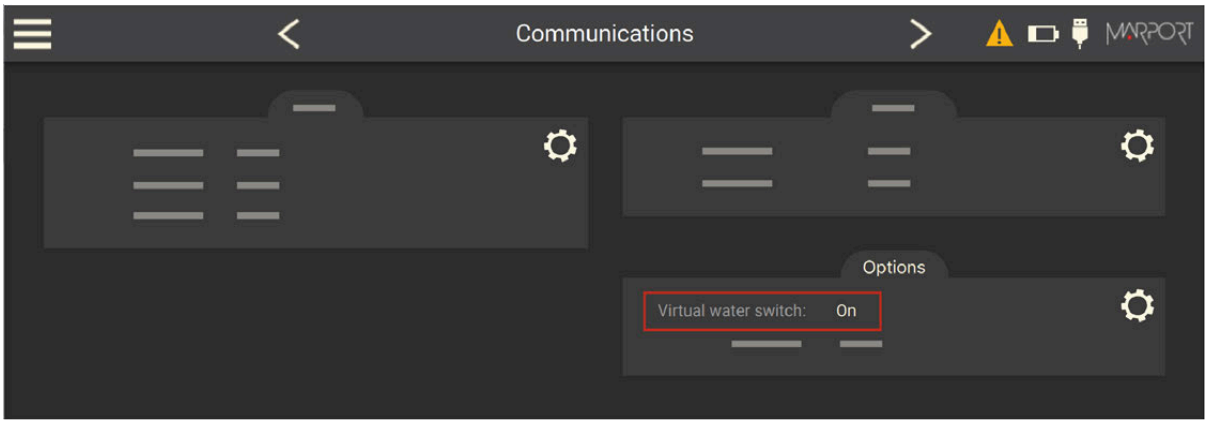


Note: When you change settings such as the uplink power or sounding range, it affects the battery consumption and remaining lifetime. The battery information will update after the sensor has been switched on and operating for 10 minutes.

About the Virtual Water Switch Option

Mosa2 has a virtual water switch option that changes the conditions under which the sensor is running.

Note: The virtual water switch is available only for the **Pro** line of sensors (PCBA A2S Gen 2 and later, and all A2H versions). It is activated by default.



- When the virtual water switch is activated: the sensor runs when the depth is more than 2 meters and the water switch is in contact with water.

  We recommend to activate it to prevent the sensor from running outside water. For example, if the sensor is hauled on deck and stays inside the net, the water switch remains wet and keeps emitting. This will significantly reduce the battery lifetime.

  Note: When activated, an orange warning icon is displayed in the top bar.

- When the virtual water switch is deactivated: the sensor runs only when the water switch is in contact with water. The depth is not taken into account.

  We recommend to deactivate it if the sensor is operating close to the surface or if you need to test the sensor in the office.

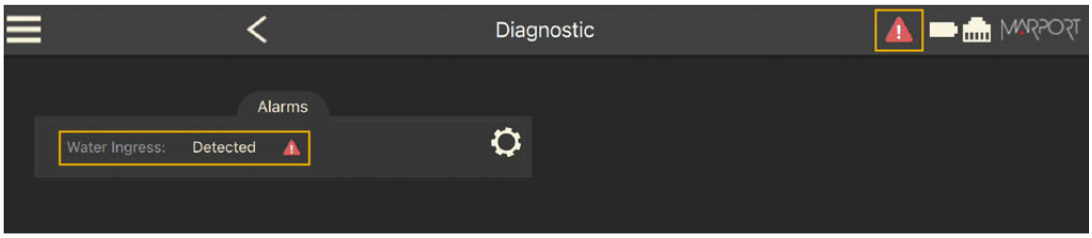
Diagnostic Information

Scala2 and Mosa2 applications warn the user in case of water ingress in the sensor.

Note: Diagnostic information is available for Marport Pro sensors (A2S and A2H PCBA versions), from the firmware version **F450-02.02.00 or later** and Mosa2 version **02.11.08**.

In case of water ingress in the sensor, alarms are displayed in Scala2 Virtual Charger Room, in Mosa2 and on the charger plug when connected to the sensor.

- In **Expert** mode, Mosa2 displays a dialog at the start of the application and warning icon in the toolbar and diagnostic page:



- The charger plug displays a warning icon:

When the alarm appears, take the sensor out of water immediately and contact Marport support.

Warning: In case of water ingress in the product, do not charge it: battery may vent or rupture, causing product or physical damage.

Configuring the Trawl Node

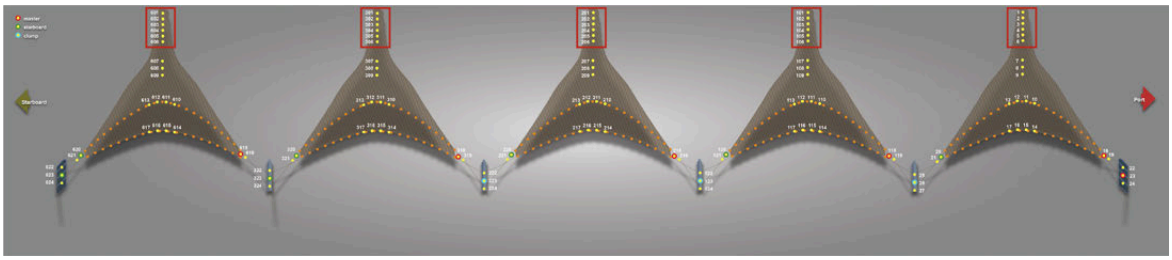
You need to give a trawl node to the sensor. It is the number corresponding to the position of the sensor on the trawl.

About this task

The trawl nodes corresponding to the positions on the codend are the following:

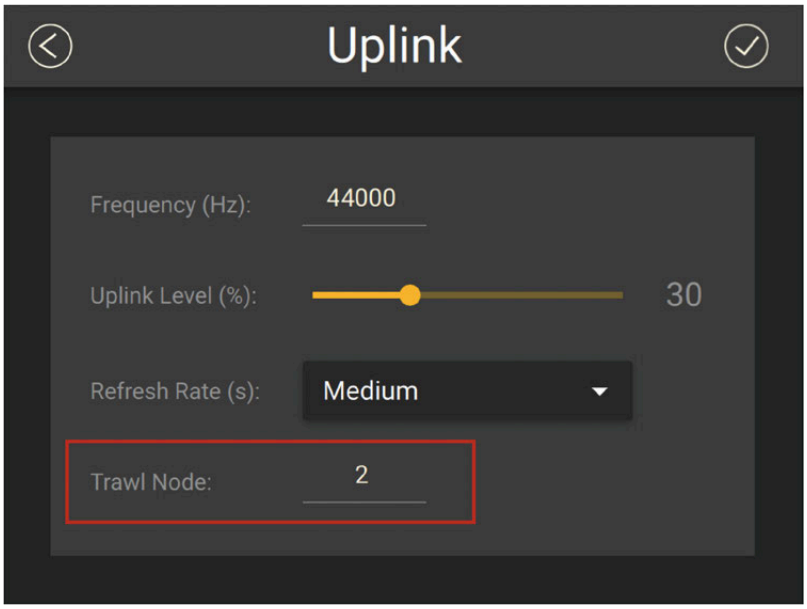
Trawl number	Node numbers
Trawl 1	1 to 6
Trawl 2	101 to 106

Trawl number	Node numbers
Trawl 3	201 to 206
Trawl 4	301 to 306
Trawl 5	601 to 606

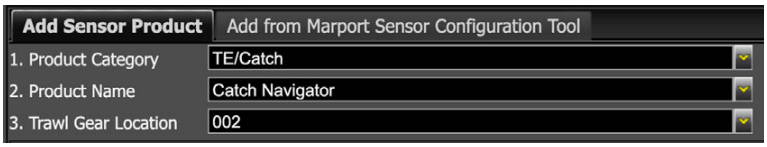


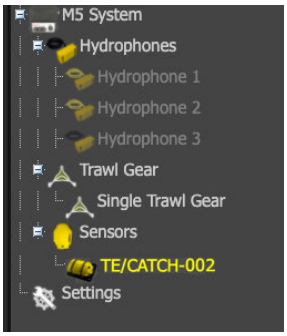
Procedure

1. Go to the **Communications** page, then click ⚙ in **Uplink**.
2. Enter a node according to the position of the sensor on the trawl.



Important: Make sure to put the same number when adding the sensor to Scala2 receiver page. If not, change it accordingly.





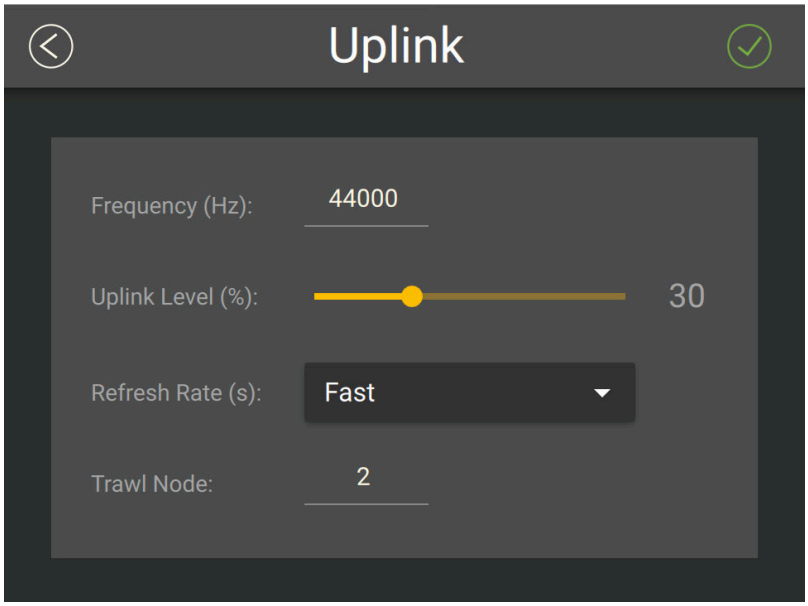
3. Click ✓.

Configuring the Uplink Frequency and Power

Configure the settings of the communication link between the sensor and the vessel.

Procedure

1. Go to the **Communications** page, then click ⚙ in **Uplink**.



2. Drag the slider to change the power of the uplink signal.

Note: A higher level of uplink power reduces the battery lifetime.

Recommended uplink powers	Conditions	Estimated battery life
33%	Works for most conditions.	23 hours
100%	◦ Sensor is far from vessel - e.g. more than 800 m depending on conditions, high depth ◦ High level of interferences ◦ Issues receiving data ◦ Low SNR	-

3. In **Refresh Rate**:
    - **Fast**: data are sent continuously
    - **Medium**: approximately every 4 seconds
    - **Slow**: approximately every 7 seconds

    We recommend to:
    - Set **Fast** if using the sensor as an echosounder.
    - Set **Medium** if displaying the echogram over 4 hours.
    - Set **Slow** to gain battery autonomy.

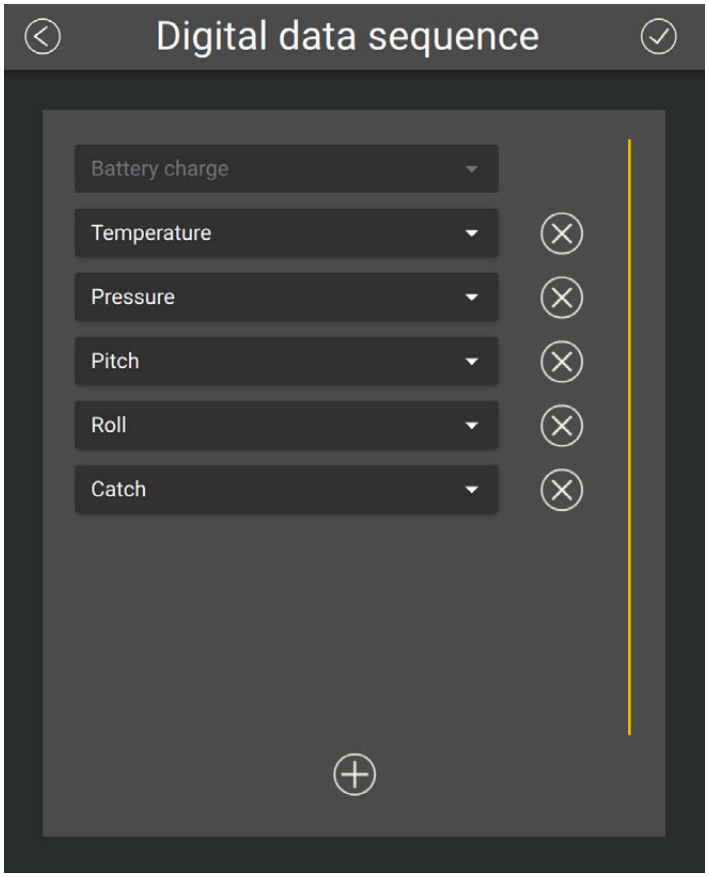
Configuring Measurement Sending Sequence

You can configure the order and types of measurements (e.g. temperature, pitch, roll...) sent to the receiver.

Procedure

1. Press command + A or click **Menu** and click **User Mode > Advanced**
2. In **Communications** page, click in **Data Sequence**.

3. To add data, click ⊕ then select data in the drop-down menu. The sequence begins by the top.



Trouble: If you do not see some data, it means it is not activated on the sensor (application file).

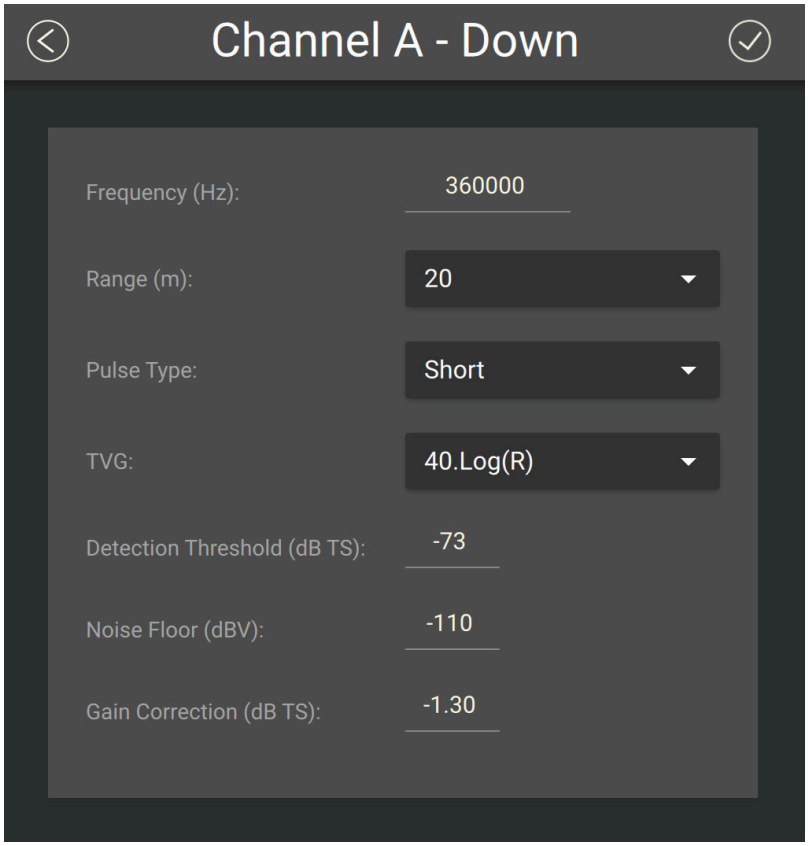
4. To delete data, click ⊗ in front of data.
5. Click ✓.

Configuring the Echo Sounder

Configure the echo sounder settings of the Catch Navigator.

Procedure

1. To select the direction of the sounding, click in **Sounding Mode**, then choose a **Mode** between **Down only** or **Down + Down2**, if this later option is activated.
2. Go back to the page, then click in **Down Sounding** or **Down2 Sounding**, depending on the **Sounding Mode** that was configured.



3. Set the **Frequency (Hz)** to 360,000 Hz (Small) or 210,00 kHz (Mjolnir Small) for the **Down Sounding** and **Down2 Sounding**.
4. The **Range (m)** of the sounding is the maximum distance at which targets and bottom can be detected.

> **Note:** We recommend to set the maximum range value when using the automatic range in order to see the sea bottom as soon as possible.

5. Select a **Pulse Type** to have an appropriate length of pulse according to the distance to the bottom:
    - **Short**: shallow waters (100 µs)
    - **Medium**: moderate depth (300 µs)
    - **Long**: deep waters (500 µs)

Important: Pulse length is an important setting for the calibration of the sensor. If you change the pulse length on a sensor calibrated for target strength, you need to calibrate the sensor again.

6. Select a **TVG** setting to compensate the signal loss in water and have targets or sea bottom displayed in the same color on the echogram, whatever the distance from the sensor:
    - 20 log: focus on bottom or school of fish.
    - 40 log: focus on individual targets.
    - 30 log: compromise between the two above settings.
7. Set the **Detection Threshold (dB TS)** to -79 if you want to detect small targets. Otherwise, leave the default settings at -73 dB.
8. Do not change the other echo sounder settings.

About the Automatic Range Mode

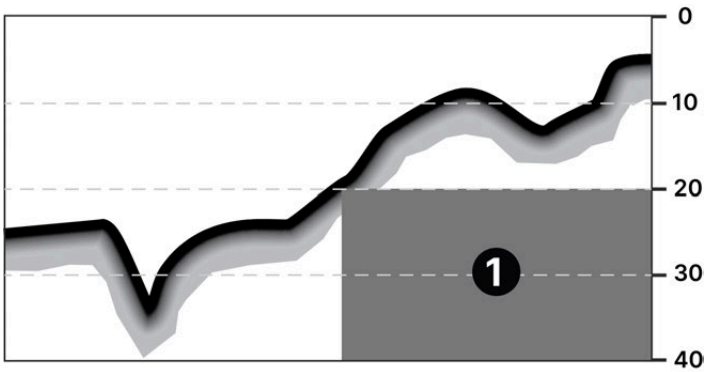
The sensor has an automatic range mode that is useful to get better quality echograms when the trawl is close to the bottom.

Principle

Range influences the display of echogram images. The smaller the range, the shorter the listening time and the better the quality of images. But if you set a bigger range, data arrives slower which results in poorer image quality.

You can activate the automatic range mode if you need to get better quality echograms when the trawl is close to the bottom. This mode is recommended when bottom trawling.

The echogram can automatically switch to a 20-meter range when the distance to the bottom is less than 20 meters (**1**).



The change of range depends on the settings configured on Mosa2.

Note: The sensor requires pitch and roll angles within -25°to 25° for automatic range operation.

Mosa2 settings

The following **Sounding Mode** options must be set in Mosa2:

- **Automatic Range** must be activated.
- The **Mode** must be set to **Down only**.
- The Down sounding **Range (m)** must be more than 20 meters.
- The **Refresh Rate** must be set to **Fast**.
- The **Trawl Opening** must be lower than 18.5 meters to be able to switch to a 20-meter range.

Note: The trawl opening value sets the minimum distance to see inside the trawl. As a result, if the trawl opening distance is equal or higher than 18.5, the sensor will not reduce the range to 20 meters.

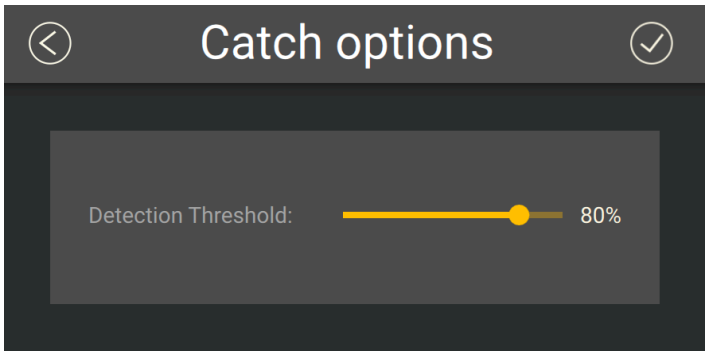
See **Configuring the Echo Sounder (on page 26)** for details about Mosa2 settings.

Changing the Detection Threshold of the Catch Sensor

You can change the threshold at which the catch status becomes full when the cords are pulled.

Procedure

1. Go to **Measurements** page and click next to **Catch**.



2. Set a value below 75% if you want the catch status to become full when the cords are not entirely extended.
3. Set a value above 75% if you want the catch status to become full only when the cords are fully extended.

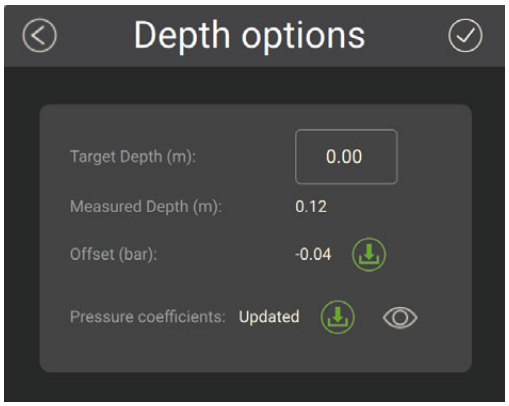
> **Important:** For proper operation, do not set the percentage below 65% or above 85%.

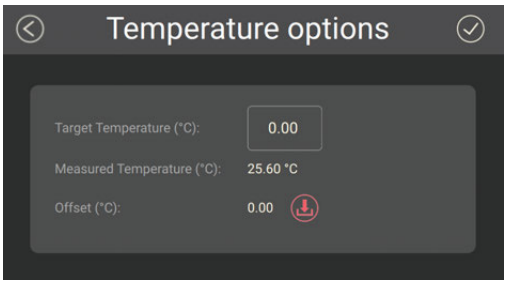
Applying Offsets to Measurements

You can apply offsets to temperature and depth measurements if the measured values do not correspond to the environment of the sensor.

Procedure

1. Go to **Measurements** page and click next to depth or temperature to apply offsets.
2. Enter a target value. Click .
   The measured value becomes the same as the target value. The value of the offset is displayed.





3. If you need to reuse offsets from a previous configuration, click then select the configuration file (*.A2C).

Testing Measures

You can test the measures taken by the sensor (e.g. battery level, temperature, depth) to check that there are no faults.

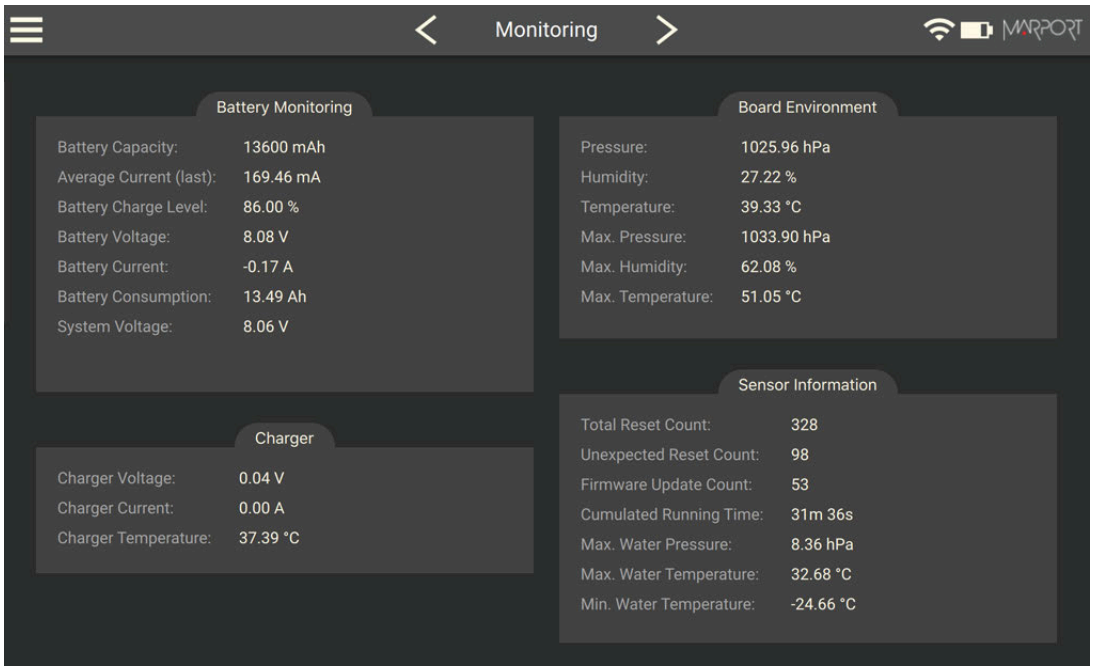
About this task

You can test the sensor in water or in air. In air, the following measures will be wrong: height, conductivity.

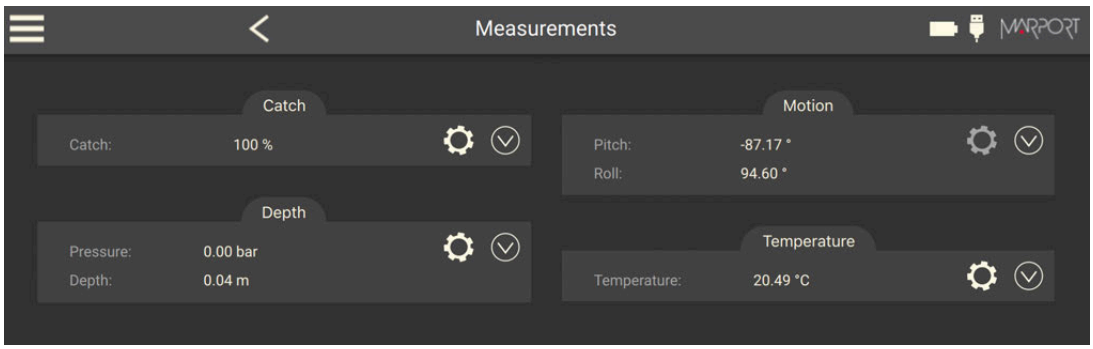
Procedure

1. Press command + A or click **Menu** and click **User Mode > Advanced**.
2. Go to the **Monitoring** page.

You can check information about the battery, board and sensor.



3. Go to the **Measurements** page.
   You can see the values of the activated measures, such as depth, temperature. If the sensor is working correctly, measures are updating.



4. Click  to check and, if necessary, adjust data measured by the sensor:
   - **Depth**: Place your sensor on a desk or on the ground and enter 0 in **Target Depth**.
   - **Temperature**: Enter the estimated temperature of your environment.

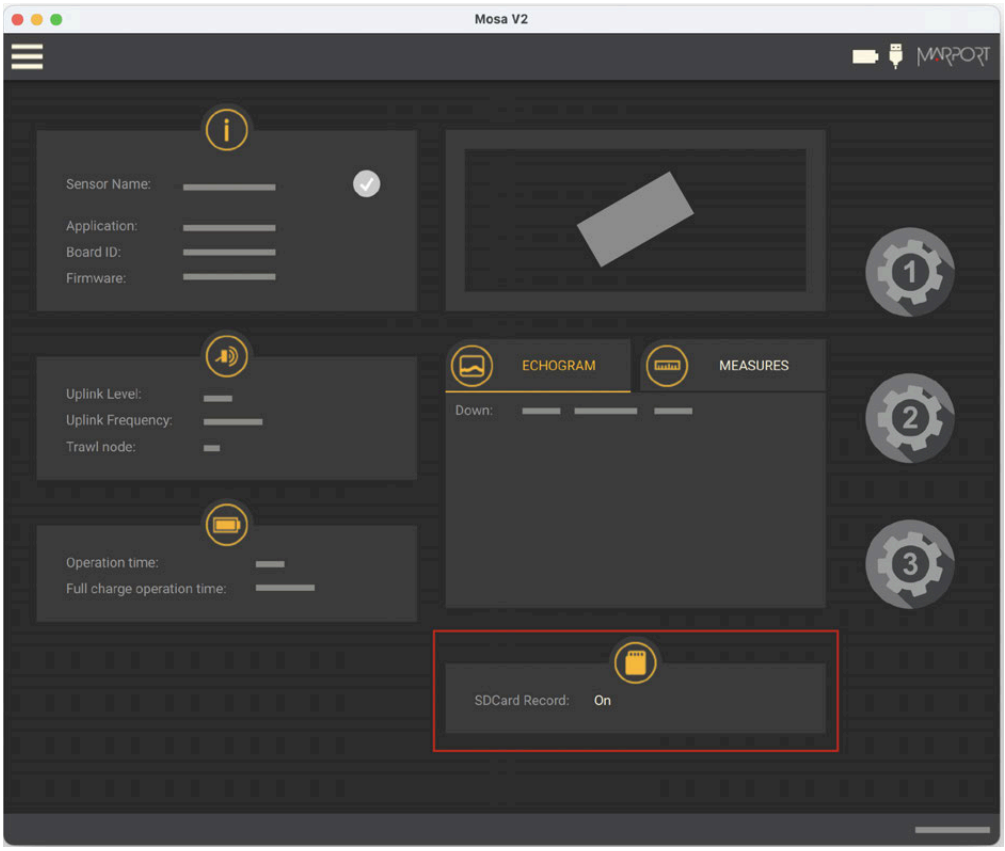
Memory Card Recording

This topic explains the memory card recording feature (this feature is optional).

Overview

Data recorded on the memory card are in higher resolution, with a higher refreshing rate.

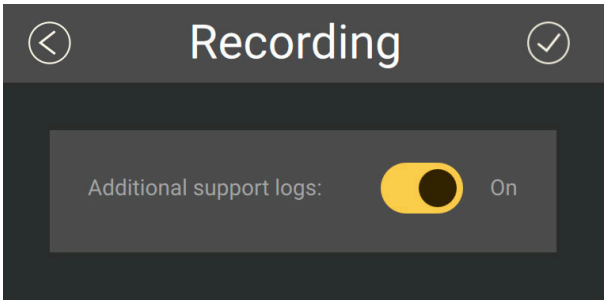
You can see on Mosa2 main page if the memory card recording feature is activated:



Additional settings

We recommend to activate the support logs to help support teams for error diagnosis.

1. Go to the **Communications** page, then click in **Recording**.
2. Activate **Additional support Log**.



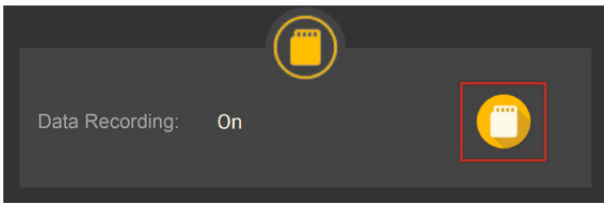
Getting data from the memory card

The last 99 recorded sensor data files and last 99 battery files are displayed. Two types of files are on the memory card:

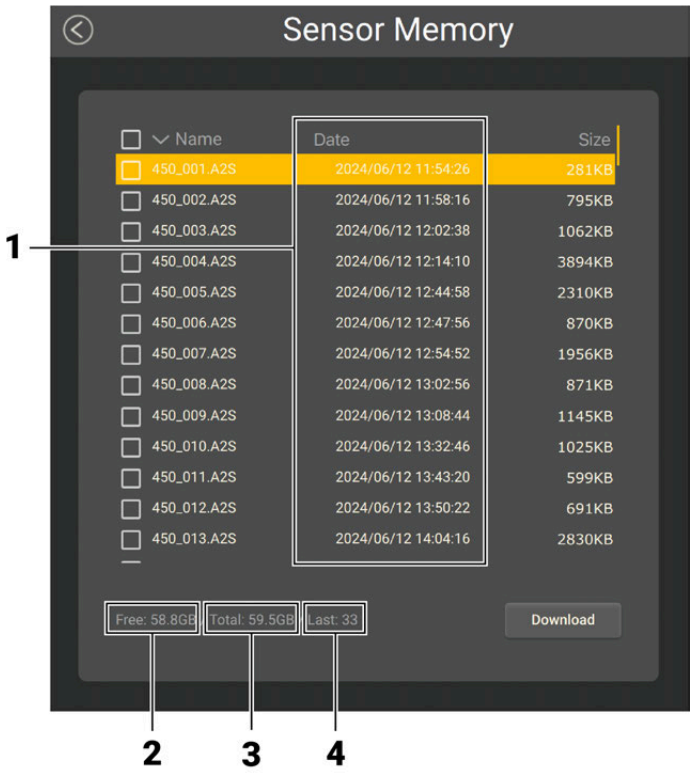
- Files containing measures recorded by the sensor. Their name begins by "450". These data are more precise and recorded more often than data received on the receiver. One file corresponds to a tow (time between entering and leaving water). The recording date displayed in the second column is synchronized with your computer time.
- BATT = Files created when the sensor is charging (1 file per charging cycle). They are useful for support teams for troubleshooting.

Note: The first time the sensor connects to Mosa2 or if the sensor desynchronizes, a clock with a warning icon is displayed in the top toolbar. Click it to synchronize the time of the SD card with the computer's time.

1. Press command + E or click **Menu** and click **User Mode > Expert**.
2. On the first page, click in **Data Recording**.



Recorded files are displayed. Click the title of the columns to sort them by their name, date or size.



1. Time of end of towing

2. Free memory

3. Total memory size

4. Index of the last file written

See **Replaying Data Recorded on a Memory Card (on page 49)** to learn how to replay these data in Scala2.

Saving a Configuration on Mosa2

You can save different configurations of the sensor to be able to quickly change the configuration when you change your fishing method.

Before you begin

- You have finished configuring the sensor.

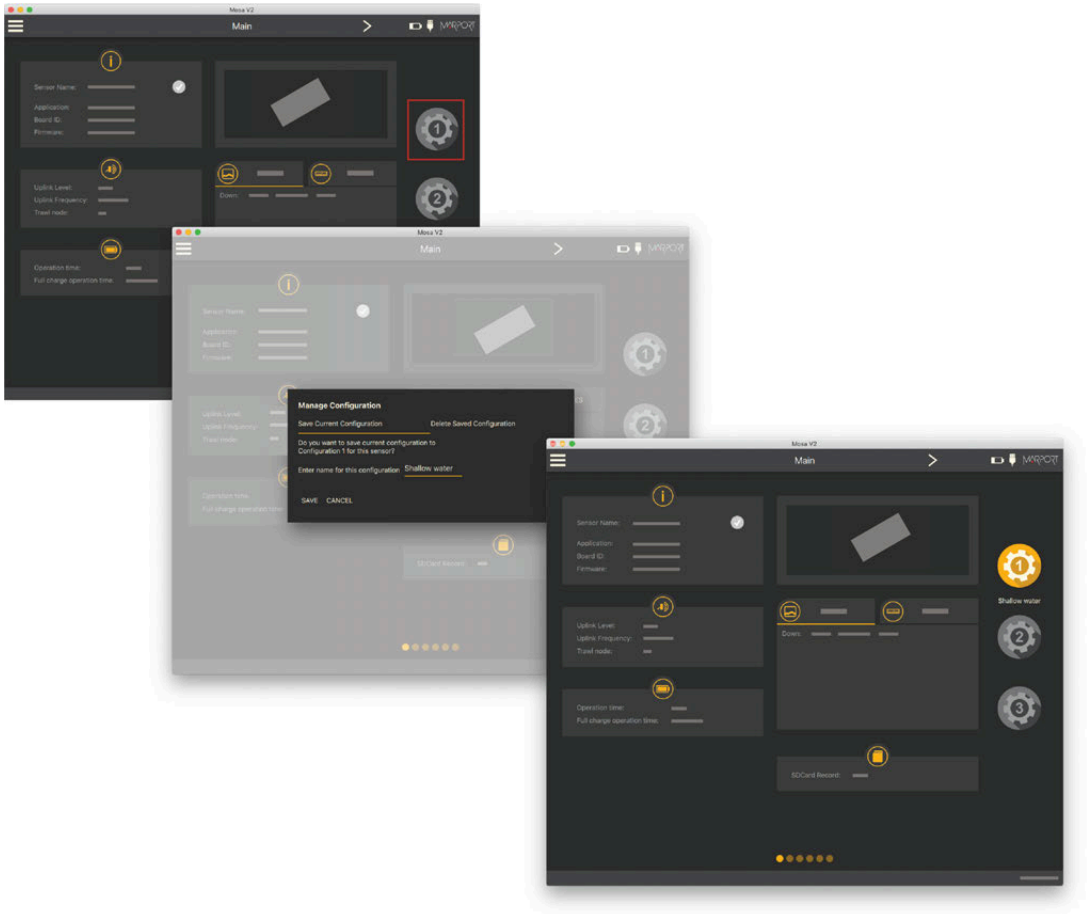
About this task

You can have up to three different configurations for the sensor. When you change your fishing method, you can apply a corresponding configuration in one click. For example:

- If fishing in shallow water, you can use a configuration with an uplink level of 33%, a short pulse and a short range.
- If fishing in greater depths, you can change for a configuration with an uplink level of 100%, a long pulse and a long range.

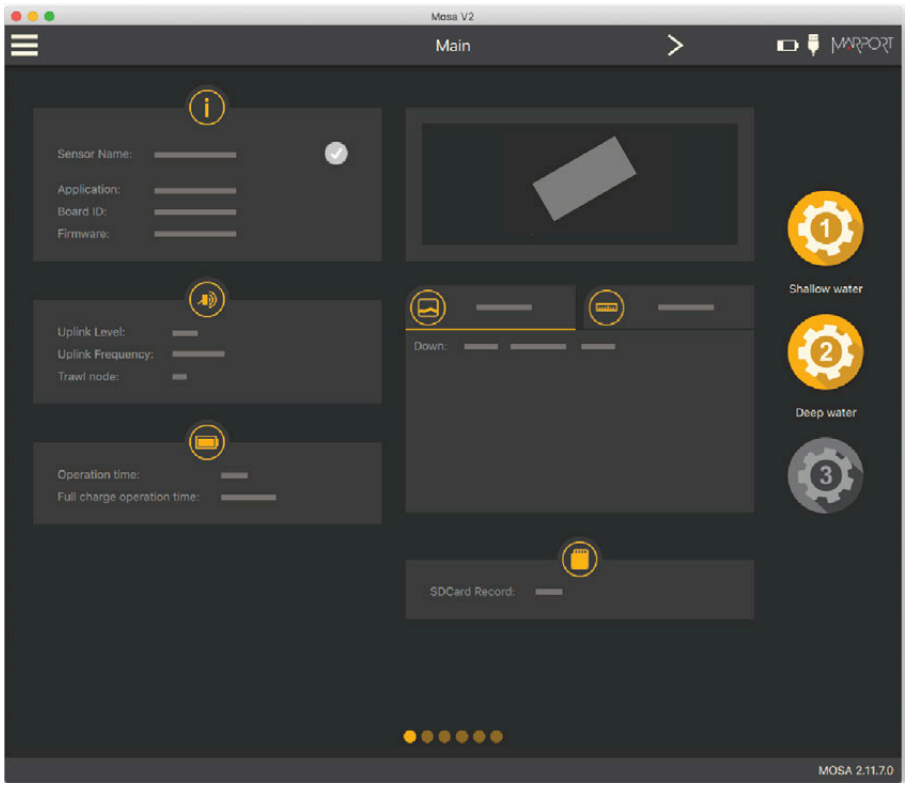
Procedure

1. When you are finished configuring the sensor, for example to use the sensor in shallow water, click one of the wheel icon  on the first page of Mosa2.
2. In the window that appears, enter a name for the configuration and save it.
   The wheel icon becomes orange and the name of the configuration is displayed underneath.



3. To create another configuration, for example this time to use the sensor in deep waters, change the settings of the sensor on Mosa2.

4. When you are finished, click the second wheel icon and save the configuration.



5. If you need to change the sensor configuration back to the first configuration (shallow water), click the corresponding wheel.
   The configuration is applied.
6. If you need to make changes to a configuration:
   a. Change settings.
   b. Maintain the click on the corresponding wheel until the **Manage Configuration** window appears.
   c. Click **OK** in **Save Current Configuration**.
7. To delete a configuration:
   a. Maintain the click on the corresponding wheel until the **Manage Configuration** window appears.
   b. Click **OK** in **Delete Saved Configuration**.

Exporting Sensor Configuration

You can export the sensor settings you configured on Mosa2 on a file. You can afterward use this file when configuring a similar sensor.

Before you begin

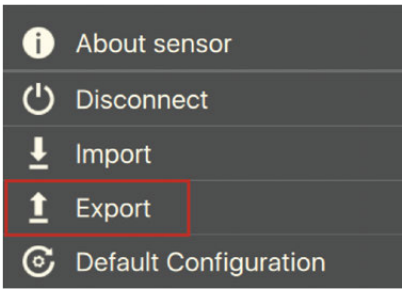
- You are finished configuring the sensor.

About this task

If you have issues with your sensor, send this file to support teams.

Procedure

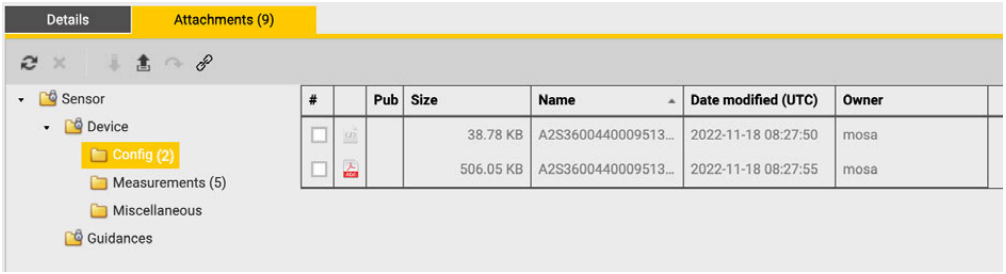
1. Click **Menu** **> Export**.



2. From the window that appears, choose a folder on your computer to save the file and click **Open**.

Results

The configuration file is exported and saved on your computer as an A2C file. If you are connected to the Internet, it is also automatically sent to MASP in XML and PDF files.



Importing a Sensor Configuration

You can apply to a sensor a configuration that has already been made on another sensor.

Before you begin

- You have exported a configuration (see **Exporting Sensor Configuration (on page 37)**) and have the *.A2C or XML configuration file.

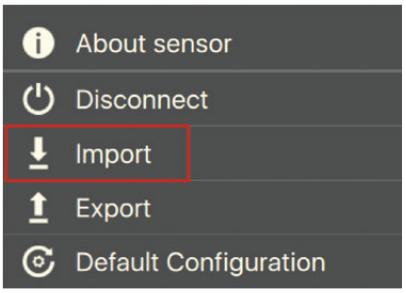
About this task

Only the following settings are imported: trawl node, recording settings (SD card, support logs), communication options (virtual water switch, simulation mode), uplink level and frequency, echo sounder settings.

Important: If the new configuration changes the echo sounder settings, you must re-calibrate the sensor for target strength value.

Procedure

1. Press command + A or click **Menu** and click **User Mode > Advanced**.
2. Click **Menu** **> Import**.



3. From the window that appears, select the *.A2C or XML configuration file.

Results

The configuration is loaded into the sensor.

System Configuration & Display

System Configuration and Display

Learn how to configure the receiver and display the sensor data in Scala2 application.

Adding the Sensor to the Receiver

You need to add the sensors to the receiver in order to display their data on Scala2.

For compatibility details, see **System Compatibility (on page 9)**.

Adding the Sensor to the Receiver

You need to add the sensors to the receiver using the system web page.

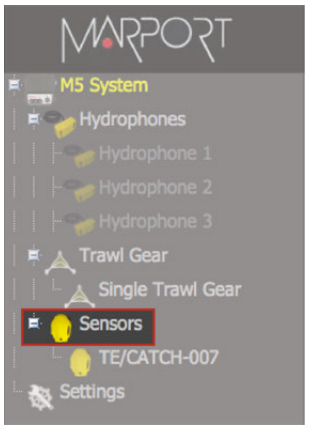
About this task

Important: To be able to add your sensor to the receiver, make sure your receiver version is compatible. Check **System Compatibility (on page 9)**.

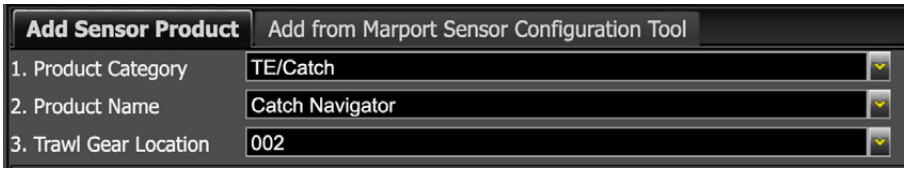
Note: Marport systems are limited to a fixed number of channels, and the sensors use a specific number of channels based on the type of data they send. The Catch Navigator uses 1 sounder channel.

Procedure

1. From Scala2, click **Menu** **> Expert Mode** and enter the password `copernic`.
2. Right-click the IP address of the receiver at the bottom of the page, then click **Configure Receiver**.
3. From the left side of the receiver page, click **Sensors**.



4. From the page **Add Sensor Product**, select the options corresponding to your type of sensor:
    - **Product Category**: TE/Catch
    - **Product Name**: Catch Navigator
    - **Trawl Gear Location**: same as defined in Mosa2 (see **Configuring the Trawl Node (on page 22)**).

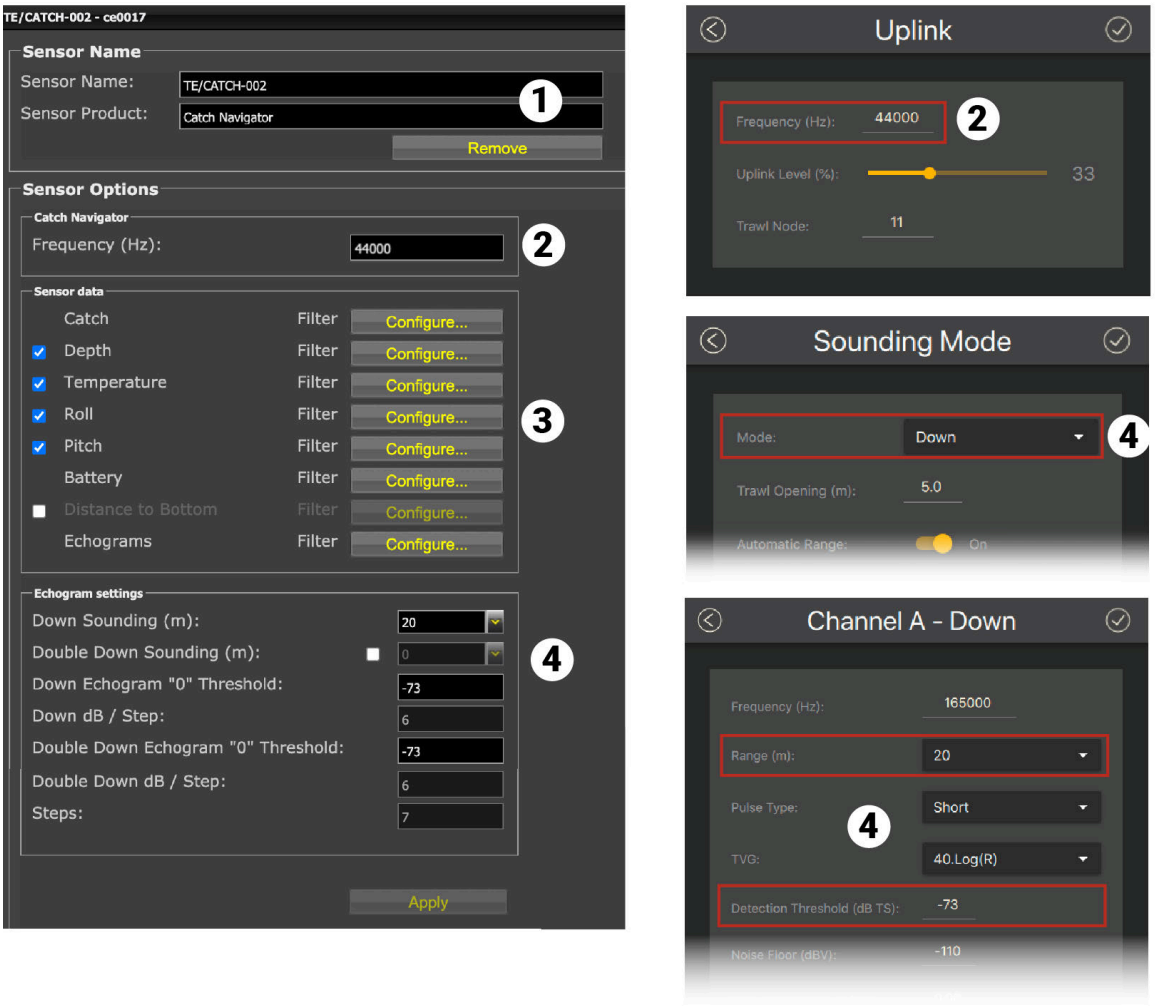


5. Click **Add Sensor**.
   The sensor is added to the receiver and displayed on the left side of the screen. The configuration page is displayed.

Configuring the Sensor Settings

You need to complete communication settings when you add the sensor to the receiver.

Important: Make sure the settings you enter here are the same as in Mosa2.



1	Sensor name displayed in Scala2 and its features.
2	Enter the same frequency as the one entered for the uplink frequency in Mosa2.
3	Click **Configure** to change filters applied on incoming data. Filters are particularly useful to reduce interferences on the echogram data. **Note:** Be aware that echogram filters such as **Echosounder and Interference Reduction** may remove small targets on the echogram.

	Tip: Please refer to Scala2 user guide for more information about the filters.
4	Select the same sounding direction, range, and detection threshold as those set in Mosa2.

Click **Apply** when you have finished.

Configuring Data Display in Scala2

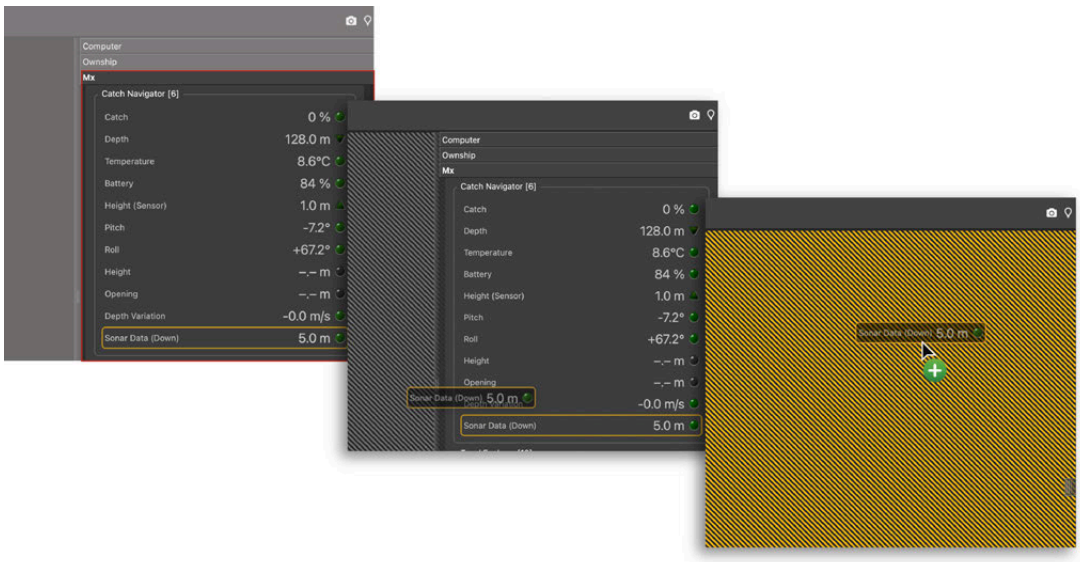
You can display the sensor's measurements and echograms on Scala2 pages.

Before you begin

Connect in **Customize** mode to configure the display of data. From the top left corner of the screen, click **Menu** **> Customize** and enter the password `eureka`.

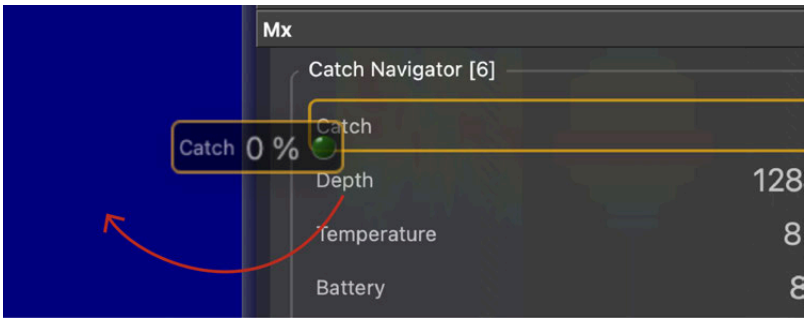
Procedure

1. Open the control panels and go to the **Mx** tab.
2. To display the echograms, click + hold **Sonar Data** from a Catch Navigator sensor and drag it to the page display.

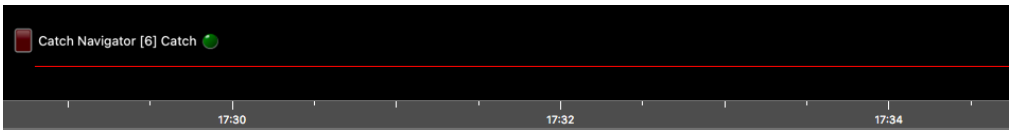


3. To know if the trawl is filling up:

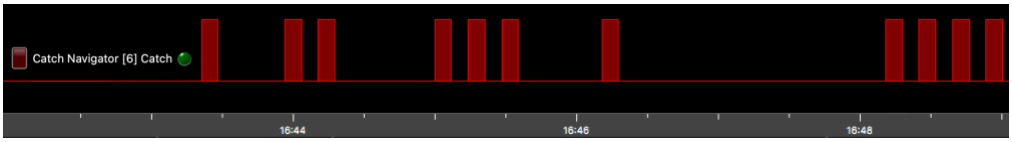
a. Open the control panels and drag **Catch** data to a page.



When the codend is empty, the history plot looks like this:

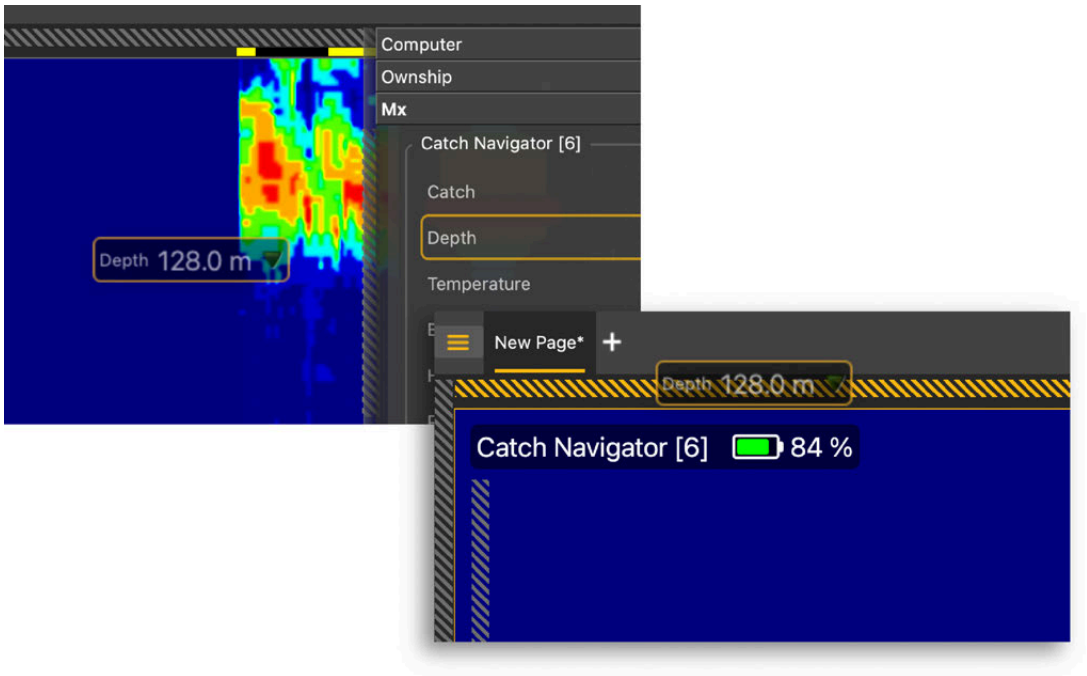


When the codend is filling up:

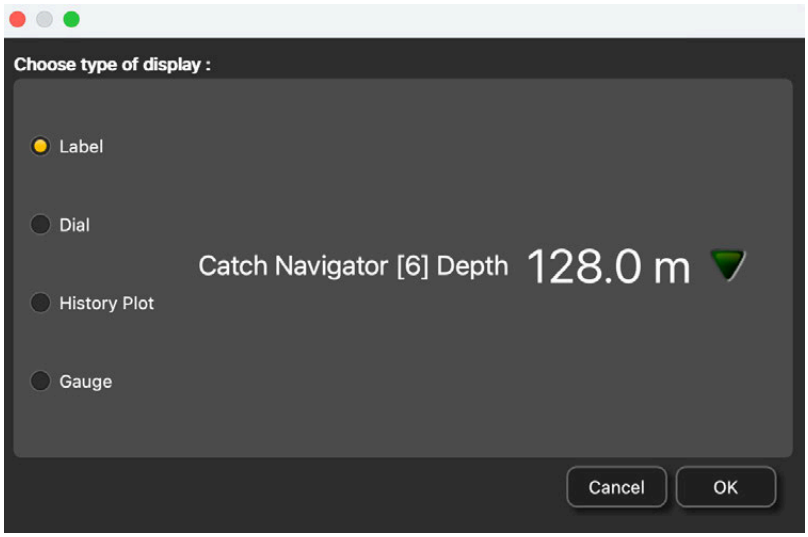


When the codend is full:

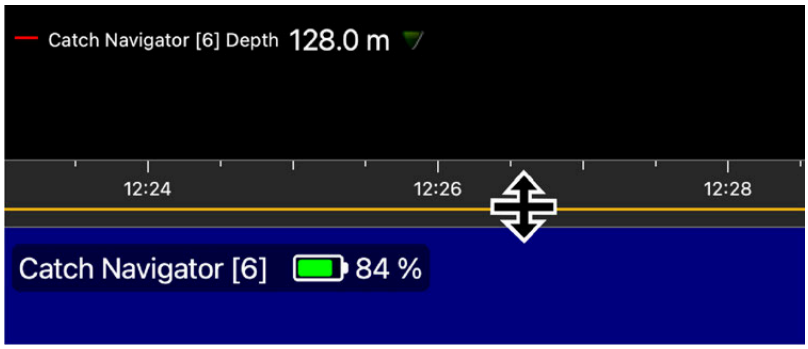
4. Click + hold other data, such as depth, pitch, roll, and drag it as well to the page display.



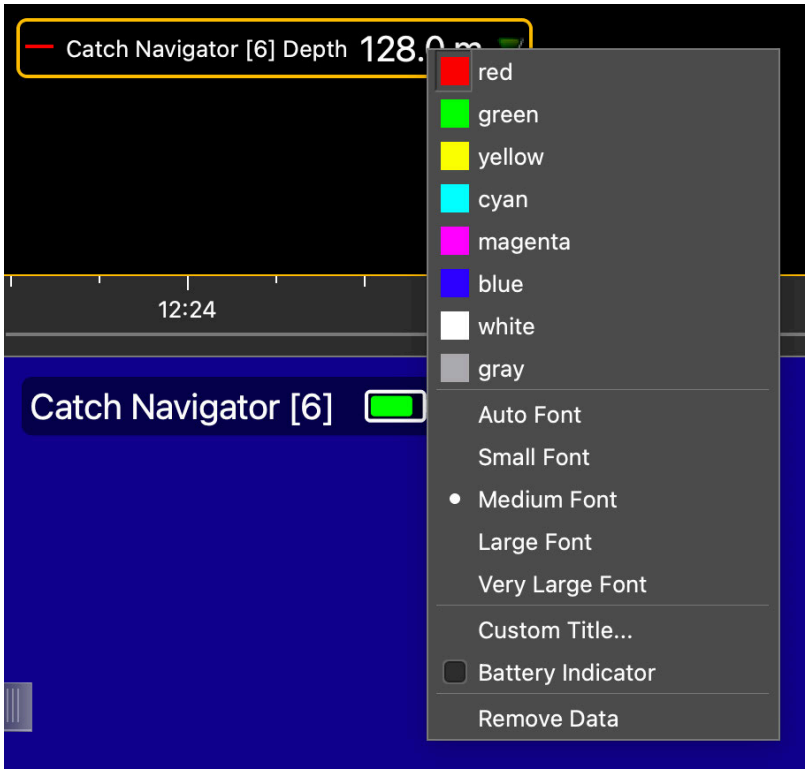
5. Select the type of display.



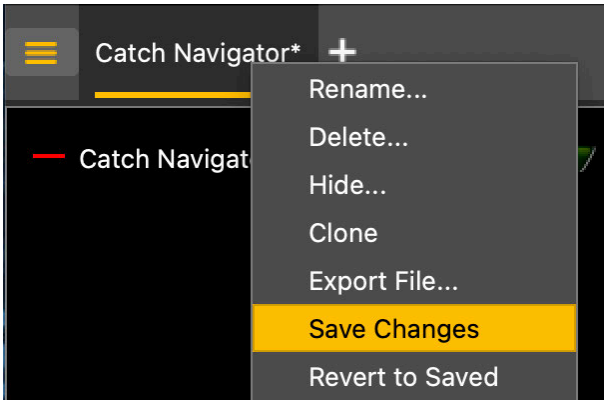
6. Drag the lines around the blocks of data to resize them.



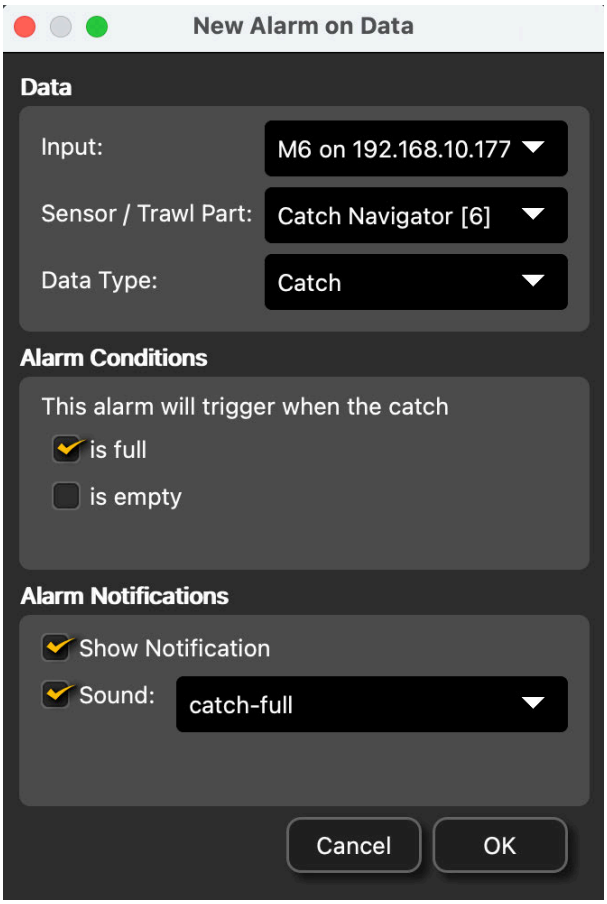
7. Right-click the title or the values of the data to display customization options.



8. To save the changes, right-click the tab with the name of the page and click **Save Changes**.



9. To be alerted when the trawl is full:
    a. From the top left corner of the screen, click **Menu** **> Settings**.
    b. From the **Settings** dialog box, go to the **Alarms** tab.
    c. Click **Add**.
    d. In **Alarm Data** and **Alarm Conditions**, enter the following settings:



Replaying Data Recorded on a Memory Card

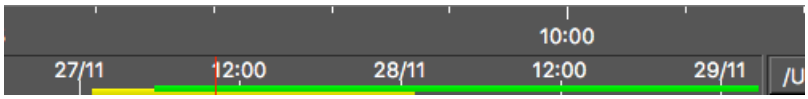
you can replay data that have been recorded in high definition on the sensor memory card card .

About this task

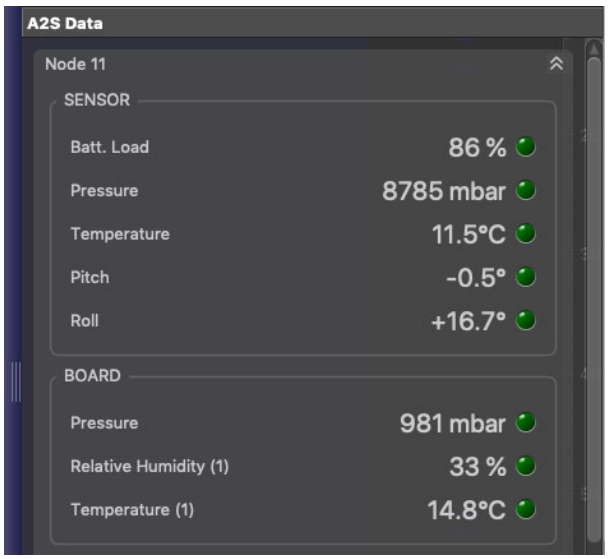
Note: Data in high definition is available only when downloading them from the sensor memory. Data received in Scala2 will have a lower definition.

Procedure

1. Download from Mosa2 the files recorded on the sensor memory.
2. Right-click the timeline and click **Change Directory** to choose the source directory where the files are stored.
   In the replay bar, the recording period of the files in high definition is displayed in green.



   In the control panels, data that were received in live are displayed in the **Mx** panel and data recorded on the SD card are displayed in the **A2S Data** panel.



3. Go to the control panels, then click and drag data from the **A2S Data** panel to a page.

Installation

Installation

Learn how to install the sensor on the trawl gear.

Removing the Sensor from the Mjolnir Small Housing

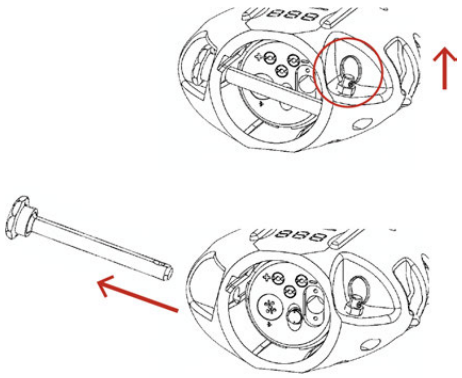
Learn how to remove the sensor from the Mjolnir Small version of housing and how to put it back.

About

Once installed, the catch sensor housing can remain attached to the net and the sensor removed from the housing. This way, you can quickly replace discharged sensors by fully charged sensors.

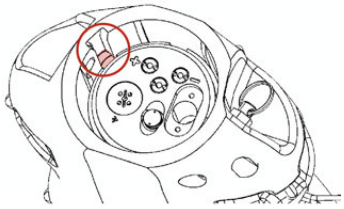
Procedure

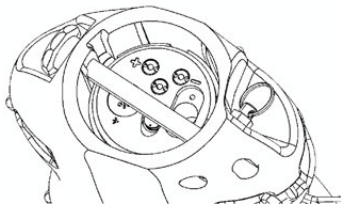
1. Remove the sensor.



   a. Pull the locking pin to release the rod blocking the bottle, then remove the rod.
   b. Remove the bottle from the housing.

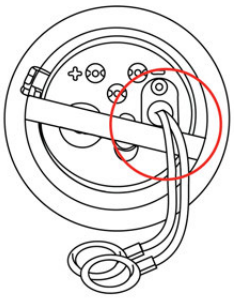
2. After charging the sensor or completing maintenance procedures, put it back.





a. The bottle has a screw on the side of the end cap. Slide the bottle so the screw fits in the guide on the inner side of the housing.
b. Pull the locking pin and slide the rod through the housing.

Note: If the pull cords are installed on the end cap: when putting back the blocking rod, make sure they are positioned so the blocking rod does not obstruct them when pulling them. It must pass above the rod.



Installing the Catch Sensors

Follow these guidelines to install a Catch Navigator on the trawl gear.

About this task

Sensors can be installed with the pull cords on the side or on the center of the sensor.

Pull cords are attached to the net. When the net fills up and the meshes expand, cords are pulled and this triggers the catch sensor.

Procedure

1. Install the sensor on the top of the codend with the **UP** side of the housing oriented toward the vessel. You can install a double-mesh piece of netting to stabilize the sensor. Make sure there is nothing in front of it that would block its signal.

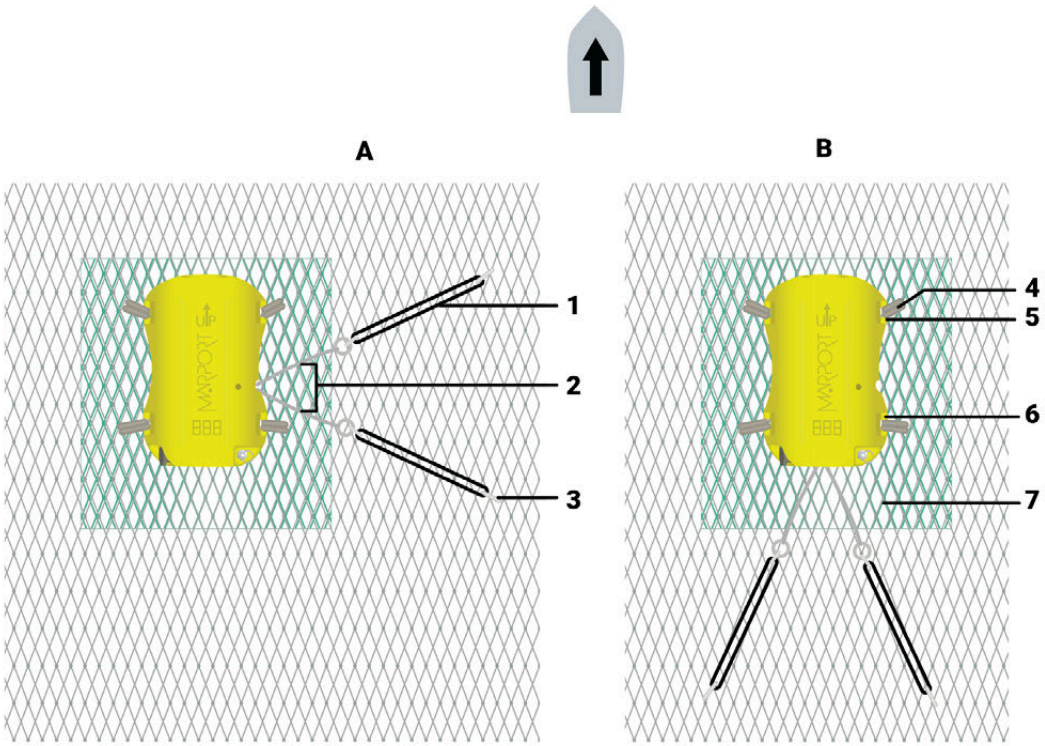
   Tip: If the meshes of the net obstruct the Catch Navigator signal, you can install the sensor inside the codend.

2. Securely attach the sensor to the net by its front and back attachment lugs:

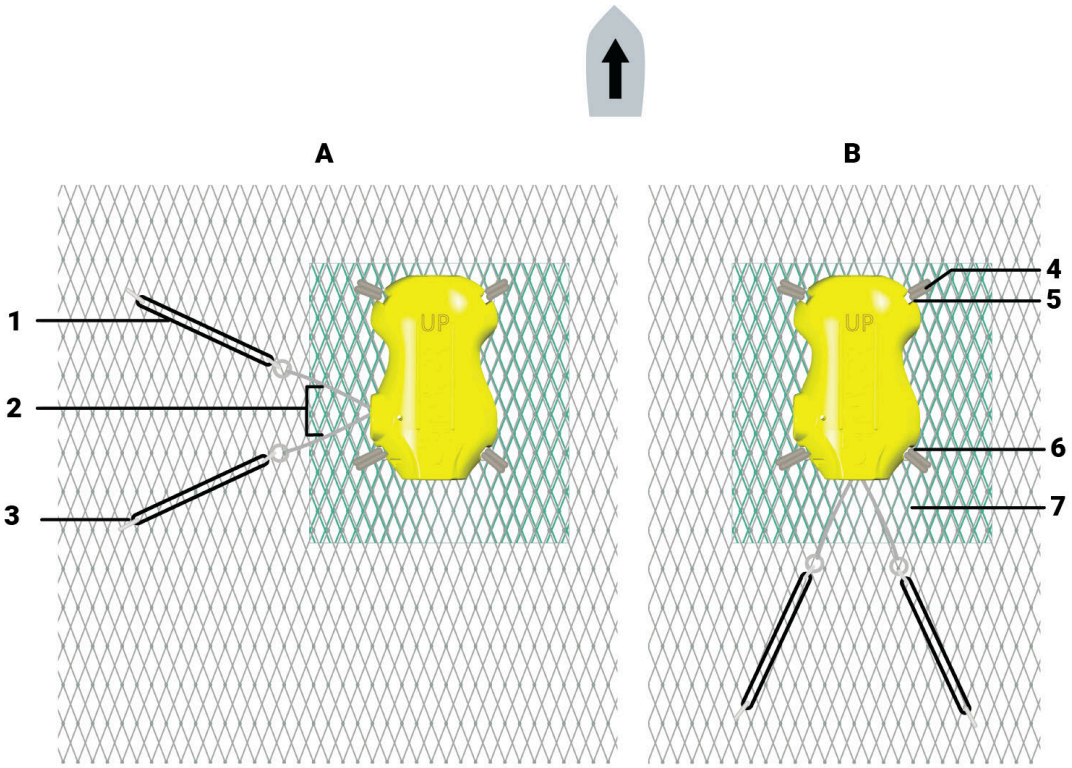
a. We recommend to attach the front and back attachment lugs with rope. This prevents metal to metal contact and extends the life of the housing.
b. When you attach the sensor, stretch the net codend at the point where you need the catch status to become full.
c. Once installed, make sure that when the net is fully stretched out it does not cause stress on the attachments points.

3. If you use a stabilization board:
   a. Put the mounting straps through the lugs on the sides.
   b. Attach the stabilization board with rope to prevent rapid wear on the board.
4. Attach one end of each rubber strap to the pull cords of the sensor, and the other ends to the net. Make sure the pull cords are taut enough to trigger when the net is full, but loose enough not to trigger when the net is empty.

Mjolnir Small



Small



A. Side-pull

B. Center-pull

1. Rubber strap

2. Pull cords

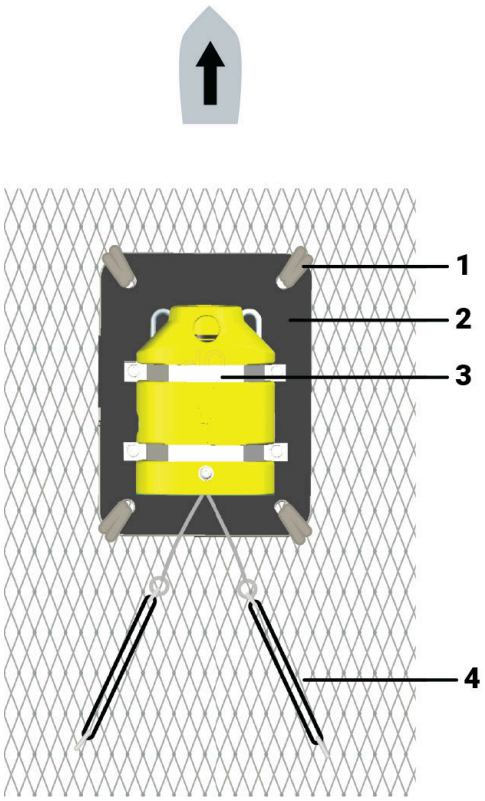
3. Snap hook

4. Knot with rope

5. Front attachment lug

6. Back attachment lug

7. Double-mesh piece of netting for stabilization



1. Knot with rope

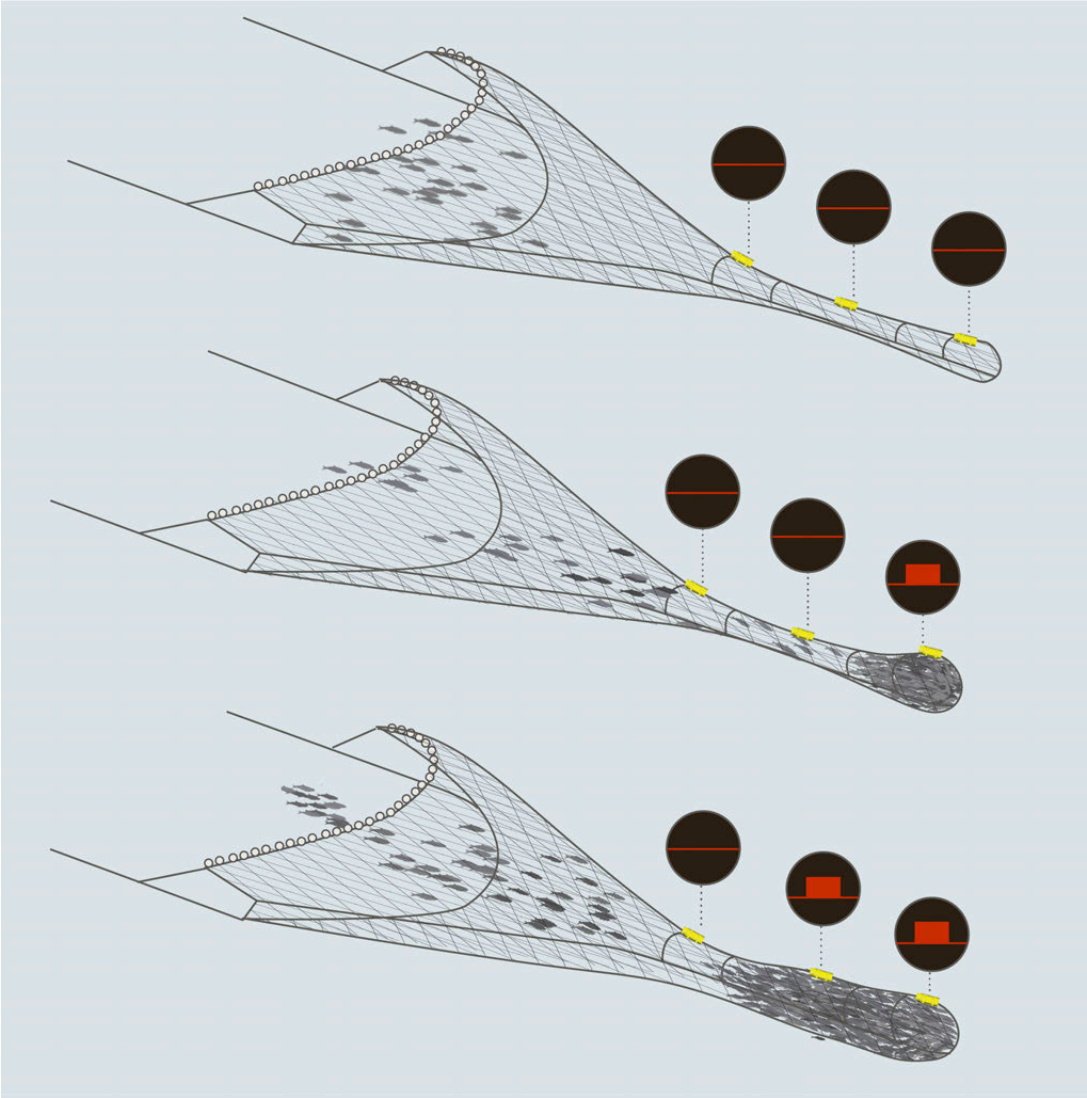
2. Stabilization board

3. Mounting strap

4. Rubber strap

Example of installation.

5. Install several sensors on the codend to better follow the filling processes. The sensors will trigger one by one, according to the amount of fish inside the codend. After a few tows, you can estimate the amount of tonnage of fish that you have depending on whether one, two or three sensors display a full status.



Maintenance & Troubleshooting

Maintenance and Troubleshooting

Read this section for troubleshooting and maintenance information.

Important: Only an approved Marport dealer can access the internal unit. Warranty will become void if anyone other than an approved dealer tries to do internal maintenance duties on the product.

Charging the Sensor with the Dock

Connect a sensor to one of the 4 charging connectors of the Dock to display its level of charge.

Before you begin

- Make sure the Dock is connected to a power supply and turned on.

About this task

Warning: In case of water ingress in the product, do not charge it: battery may vent or rupture, causing product or physical damage.

Note: For Dock products with serial number before DOC2400000: Do not leave the sensors connected on a charger that is switched off. If the charger is not connected to the mains voltage, the sensor switches on and this will drain the battery.

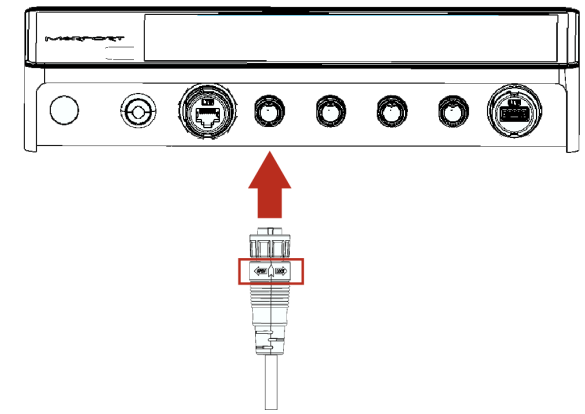
Note: Avoid full discharges and charge the battery whenever possible, at any battery level. Lithium-ion batteries do not have a charge memory, so they do not need full discharge cycles.

Procedure

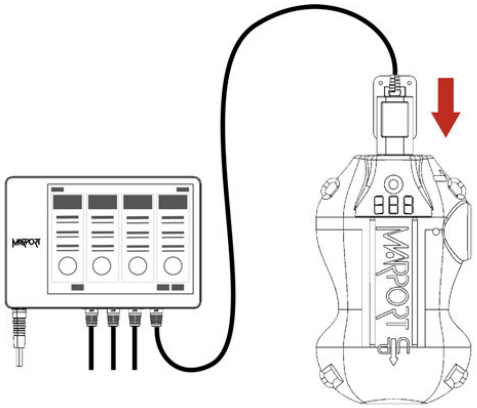
1. Before charging the sensor: wash with fresh water and dry the sensor. This prevents corrosion of the charging pins.

   Important: Check that the charging pins are not damaged. If they are, contact you local Marport dealer for replacement.

2. Connect the charger plug to one of the 4 charging ports.



3. Connect the 3-pin charging connector to the sensor charging pins.



Results

The Dock screen and Virtual Charger Room display the state of charge of the sensor.

Cleaning the Sensor

You need to regularly clean the sensor for proper performance.

Wash the sensor with fresh water and dry it before you charge or store it.

Regularly check that the sensor is clean. If not:

- Wash away mud or debris with warm water.
- Use Isopropyl alcohol to clean the end cap and transducer. Use a steel wool pencil to clean the shoulder bolts, and very fine sandpaper (180 grit) to clean between them.

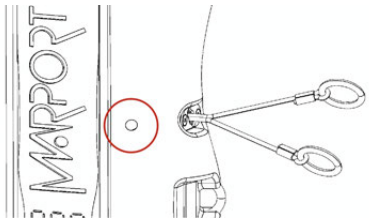
Notice: Do not use highly abrasive materials or jet wash.

Notice: Special care should be taken with sensors and components sensitive to mechanical shock or contamination.

Regularly check the state of the shoulder bolts on the end cap and clean them using a swab or Q-tip with Isopropyl alcohol. Fully clean the surface from debris and inspect the surface for burrs or pitting.

Regularly clean the pull cord magnet or it may stop working:

- A hole on the side of the Mjolnir Small housing allows you to clean the magnet assembly. Use a water jet or an air blower to remove any sand that may have accumulated around the magnet.



- If needed, remove the metal disk fixed on the housing and clean the magnet with a swab or Q-tip. See **Replacing the Catch Magnet or Cords (on page 63)** to know how to remove the components.

Maintenance Checklist

We recommend you to follow this maintenance schedule for better performance and to avoid any trouble with the equipment.

Before use	• Check that all attachment equipment are not worn or torn. Replace when appropriate. • Check that the sensor is clean. See **Cleaning the Sensor (on page 59)** for cleaning procedures. • Check the battery level 24 hours before use and recharge if necessary.
After use	Wash the sensor with fresh water.

Between uses	When the sensor is not in use, store in a dry area, without humidity, at a temperature between -10° and 70 °C (14 to 158 °F).
Not used for more than 3 months	• Do not leave the batteries at full charge or discharged for a long period of time or they will wear out. • Every 6 months, put the sensor in charge for less than an hour.
Every 2 years	The sensor must be returned to an approved Marport dealer for inspection and maintenance.

If the sensor has not been not used for more than 3 months, we highly recommend to check the following points before using it:

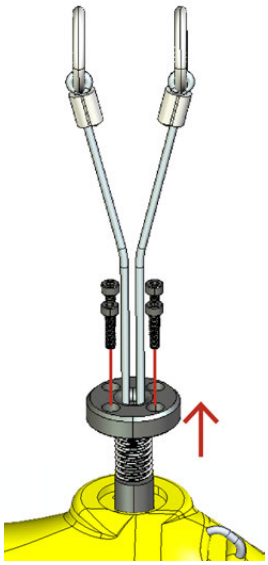
- Make sure the sensors on the end cap are in good condition and clean.
- Connect the sensor to a charger and check the charging status.
- Switch on the sensor by activating the water-switch, then listen for a ping noise and check if you see the LED switched on.
- Test the sensor measures with Mosa2: depth, temperature, pitch, roll, and if applicable: spread distance, echogram, catch status, speed measures (using the EM log tester).
- If you have a test hydrophone, check the reception in the wheelhouse with Scala2.

Changing the Pull Cords Position

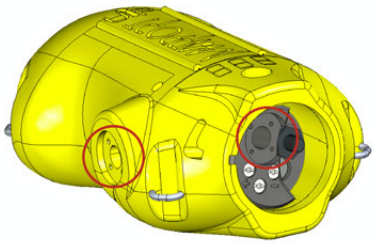
You can change the pull cords position on the sensor between center-pull or side-pull.

Procedure

1. Remove the screws on the pull cord assembly with a 9/64 size Allen key.



2. Remove the pull cord assembly and install it again on the endcap (center-pull) or the side of the housing (side-pull).



3. Apply anti-seize on the screw threads, then tighten the screws with the 9/64 size Allen key.

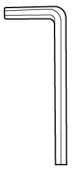
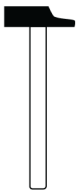
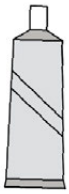
Replacing the Catch Magnet or Cords

You can replace the magnet or cord that are part of the pull cord assembly when they are broken.

Before you begin

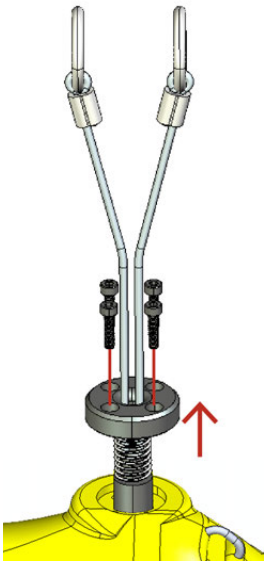
Note: Only qualified Marport technicians can do this task.

For this task you need the following tools:

			
9/64" Allen key	Drift punch / pliers	Arbor press / hammer	Anti-seize

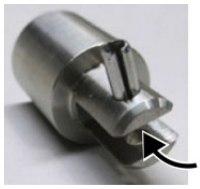
Procedure

1. Remove the old pull cords.



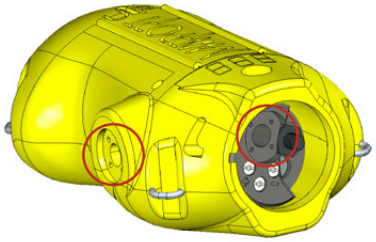
   a. Remove the screws on the pull cord assembly with a 9/64 size Allen key.
   b. Remove the cords, spring and magnet from the hole.

2. If the pull-cords are in good condition, only replace the magnet.



a. To remove the old magnet, remove the pin between the arms of the magnet using a drift punch or pliers.
b. Slide the rope end between the arms of the new magnet with the pin facing up **(1)**.
c. Install the pin down through housing arms to secure rope in place. You can use an arbor press or hammer.
d. Check that the rope is not pinched between the pin and housing arms and that the pin does not interfere with the spring.

3. Install the new pull-cord assembly.



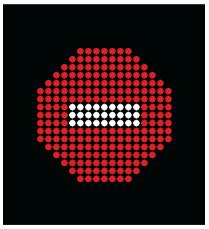
a. Install the new pull-cord assembly in the hole on the side or end cap of the sensor.
b. Apply anti-seize on the screw threads, then tighten the screws with the 9/64 size Allen key.

Troubleshooting

Learn how to solve common problems.

Warning icon on the Dock charger plug

The sensor is not detected by the Dock and there is a warning icon on the Dock charger plug.

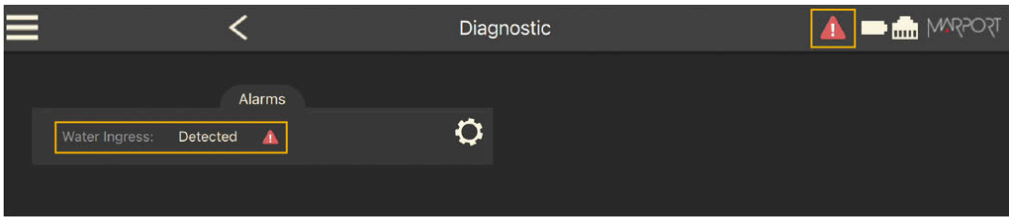


➜ The shoulder bolts are dirty or damaged.

- Clean them using a swab or Q-tip with Isopropyl alcohol.
- Fully clean the surface from debris and inspect the surface for burrs or pitting.
- If not taken care of, there is a risk of short circuit.

➜ If you have inspected the shoulder bolts and the problem persists, it means water may have leaked into the sensor.

- Connect the sensor to Mosa2 to check if there is a diagnostic alarm:
    1. Connect the sensor to a Dock charger plug or connect a Configuration Cable from the computer to the sensor, and open Mosa2.
    2. From Mosa2, go to the **Diagnostic** page and check the alarms.



- If there is an alarm or if the sensor is not detected by Mosa2, disconnect it from the Dock and do not charge it until it is inspected by a technician.
- Send the sensor back for servicing to a Marport office.

Important: Only Marport technicians can open the sensor to access the internal components.

CAUTION: In case of water ingress into the sensor, battery may vent or rupture, causing product or physical damage.

Mosa2 does not open due to error message

Mosa2 displays an error message saying it cannot be opened.

→ Your Mac security preferences do not allow you to open applications not downloaded from the App Store.

1. From the upper left corner of the screen, click **Apple menu > System Preferences > Security & Privacy**.
2. Click the lock icon and enter the password, if applicable.
3. At **Allow apps downloaded from**, select **Anywhere**, then close the dialog box.
4. **macOS Sierra or later: Anywhere** option is not displayed by default. To display **Anywhere**:
    a. Click the magnifying glass from the top right corner of your screen and type `Terminal`.
    b. Click **Terminal** from the results.
    c. Enter in the terminal: `sudo spctl --master-disable`.
    d. Press Enter.

    Anywhere option is now displayed in **Security & Privacy** preferences.

Sensor does not connect correctly with Mosa2 when using the Configuration Cable

Remember: If the sensor does not connect correctly with Mosa2, always:

- Disconnect both USB connector and three-pin plug.
- Connect again the Configuration Cable.
- Make sure the three pins are fully inserted inside the sensor.

→ Mosa2 does not automatically open when connecting the Configuration Cable.

- Check that you see Marport Captain icon in the desktop taskbar. If you do not see it: close, then open Mosa2. The icon should appear in the taskbar.

  Note: Marport Captain is a program running in the background. It allows Mosa2 automatic opening and displays shortcuts to Mosa2 and Scala2 applications installed on the computer. It should not be closed.

- If the problem persists, install Mosa2 again.

→ At the end of step 2 of the startup wizard, the sensor does not respond. Mosa2 displays a red cross and the Configuration Cable LED is red.

- Check that no other instance of Mosa2 application is already running on the computer. If this is the case, close both applications, then open only one.
- Or else, connect the sensor to a charger and wait until it is fully charged.

→ The sensor has been disconnected from Mosa2.

- Check that the Configuration Cable is not connected to a USB hub. The Configuration Cable must be connected directly to the computer.
- If the computer goes to sleep mode, the sensor may be disconnected. Change the settings on your computer to increase the time before sleep mode.
- If the problem persists, connect the sensor to a charger and wait until it is fully charged. Then try again to connect.

→ Mosa2 displays a critical error message.

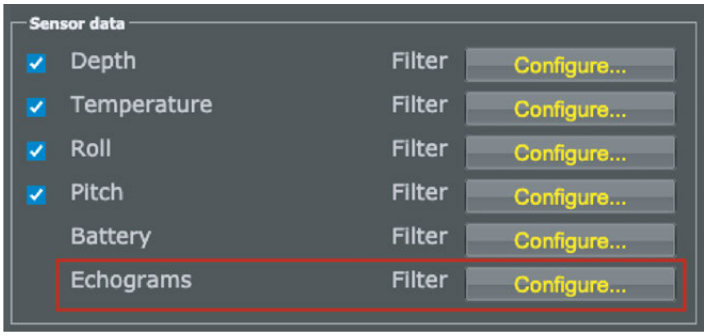
- Disconnect both USB connector and three-pin plug. Then, connect again the Configuration Cable. If the message is still displayed, it means there is an issue with the sensor's components. Contact Marport support.

The echogram has a lot of interference

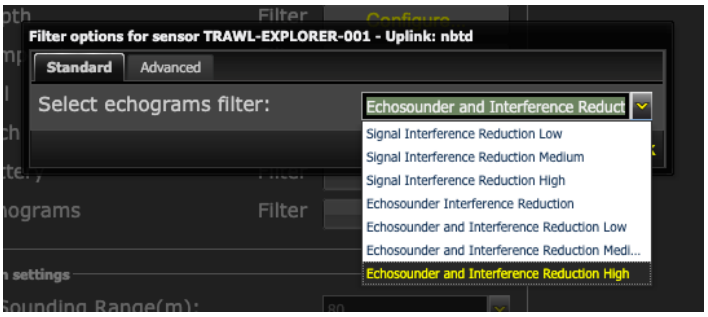
➜ There is interference from environmental noise or other equipment such as echosounders. You need to increase the level of the echogram filter in Scala2.

Important: Increase the level of the echogram filter only if the echogram has a lot of interference. Be aware that this filter will remove small targets.

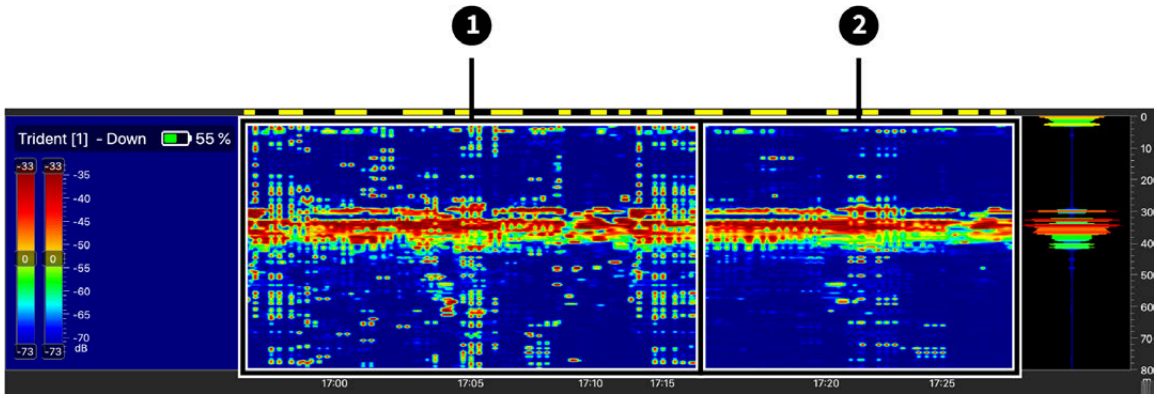
1. From Scala2, click **Menu** **> Expert Mode** and enter the password `copernic`.
2. Right-click the IP address of the receiver at the bottom of the page, then click **Configure Receiver**.
3. Click the name of the sensor in the system tree view.
4. In **Sensor Options**, click **Configure** in front of **Echograms**.



5. In **NBTE Echograms Filter**, select **Echosounder and Interference Reduction Medium** or **Echosounder and Interference Reduction High**.



Here is an example of result when applying this filter:



1. Noisy echogram with default filter (**Echosounder and Interference Reduction Low**)

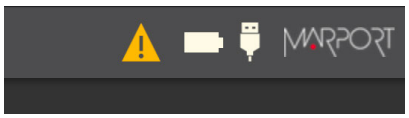
2. With **Echosounder and Interference Reduction High** filter applied.

The sensor is not running when testing out of water

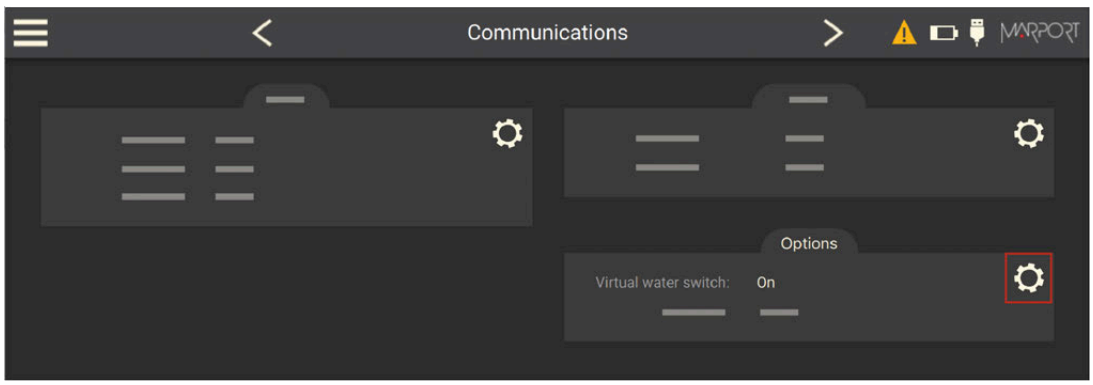
You activated the sensor water switch outside water or in a low level of water (for example for testing purpose) but it does not switch to running mode and does not emit any data.

➜ The virtual water switch option may be activated in Mosa2. When this option is activated, the sensor runs only at a depth more than 2 meters. For more details, read **About the Virtual Water Switch Option (on page 21)**.

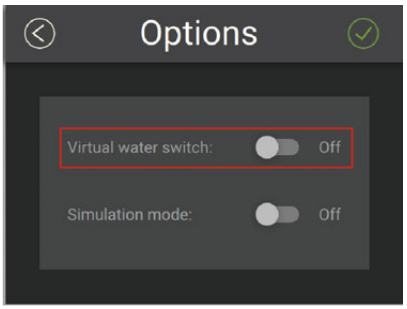
1. Connect the sensor to Mosa2 and check if there is an orange warning sign at the top of the window. If yes, it means the virtual water switch is on.



2. Go to **Communications** page, then in **Options**, click ⚙.



3. Deactivate the **Virtual water switch** option.



Sensor is not charging with the Medusa or Basic Marport legacy charger

You connected your Pro sensor to a Medusa or Basic Marport charger, but the sensor has not been charged.

Tip: When connecting the sensor to a Medusa or Basic Marport legacy charger, look at the sensor transducer LED to know if it is charging or not.

- LED is blinking red when compatible and charging.
- LED is blinking red for 10 sec. then stops, when incompatible.

➜ By default, Pro sensors are not compatible with legacy Marport chargers.

- Compatibility with legacy Marport chargers is available as an optional feature. It must be activated by Marport sales offices.

➜ If the feature is activated, but the sensor is not charging, it may be because the sensor firmware is not compatible with this feature. In order to be compatible, the sensor firmware version must be **F450-02.03.01 or later**.

1. You can check the sensor version from Mosa2:

2. If the version is lower, ask your local Marport office for an update.

Support Contact

You can contact your local dealer if you need maintenance on your Marport products. You can also ask us at the following contact details:

FRANCE

Marport France SAS
8, rue Maurice Le Léon
56100 Lorient, France
supportfrance@marport.com

ICELAND

Marport EHF
Tónahvarf 7
203 Kopavogur, Iceland
supporticeland@marport.com

NORWAY

Marport Norge A/S
Breivika Industrivei 69
6018 Ålesund, Norway
supportnorge@marport.com

SOUTH AFRICA

Marport South Africa
Cape Town, Western Cape
11 Paarden Eiland Road
Paarden Eiland, 7405
csanter@marport.com

SPAIN

Marport Spain SRL
Camino Chouzo 1
36208 Vigo (Pontevedra), Spain
supportspain@marport.com

UNITED KINGDOM

Marport UK Ltd
32 Wilson Street
Peterhead, AB42 1UD, United Kingdom
gyoungson@marport.com

USA

Marport Americas Inc.
12123 Harbour Reach Drive, Suite 100
Mukilteo, WA 98275, USA
supportusa@marport.com

Appendix

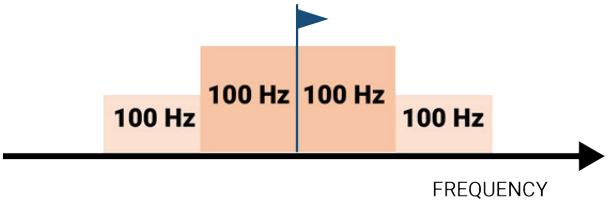
Frequency Plan

It is important to carefully plan the setup of your sensors before adding them to the system. You can create a table with a list of frequencies and complete it when you add sensors.

Frequencies and intervals

The diagrams below show the bandwidth of the different types of Marport sensors and intervals you must respect when adding other sensors.

PRP sensors (e.g. Catch sensor, Trawl Speed, Spread sensor...)

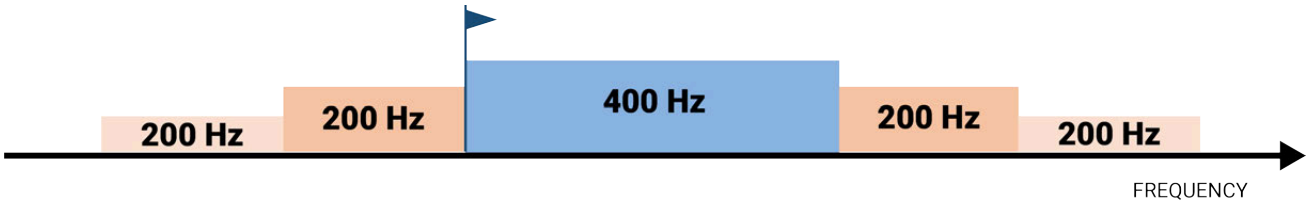


Example: If the frequency of the sensor is 40kHz, there should be no sensors between 39.9 and 40.1kHz.

Marport Pro sensors (e.g. Trident, Door Explorer,
Door Sensor Pro, all Navigator range except Catch)

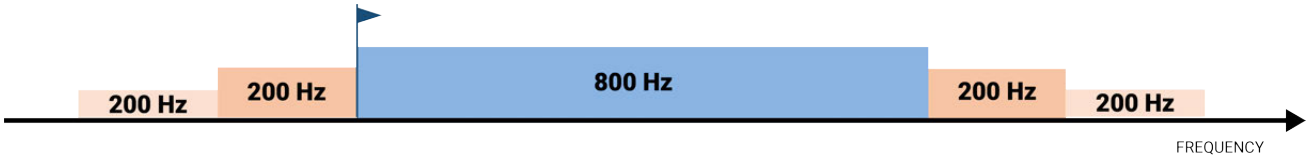
Example: If the frequency of the sensor is 40kHz, there should be no sensors between 39.8 and 41.2kHz.

NBTE sensors (e.g. Speed Explorer, Trawl Explorer,
Catch Explorer, Catch Navigator, Door Sounder)



Example: If the frequency of the sensor is 40kHz, there should be no sensors between 39.8kHz and 40.6kHz.

HDTE narrow band mode



Example: If the frequency of the sensor is 40kHz, there should be no sensors between 39.8kHz and 41kHz.

HDTE wide band mode

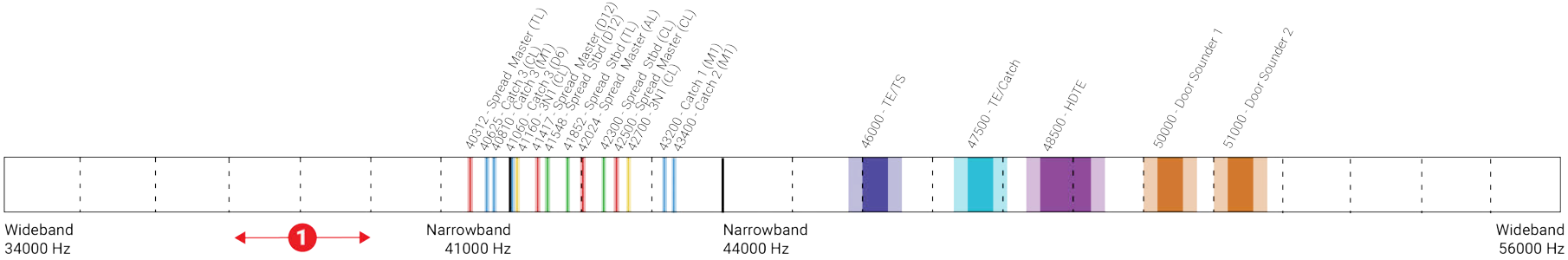
Example: If the frequency of the sensor is 40kHz, there should be no sensors between 39.8kHz and 42.6kHz.

Frequency of the sensor | Bandwidth | Mandatory distance with other sensors | Recommended distance with other sensors

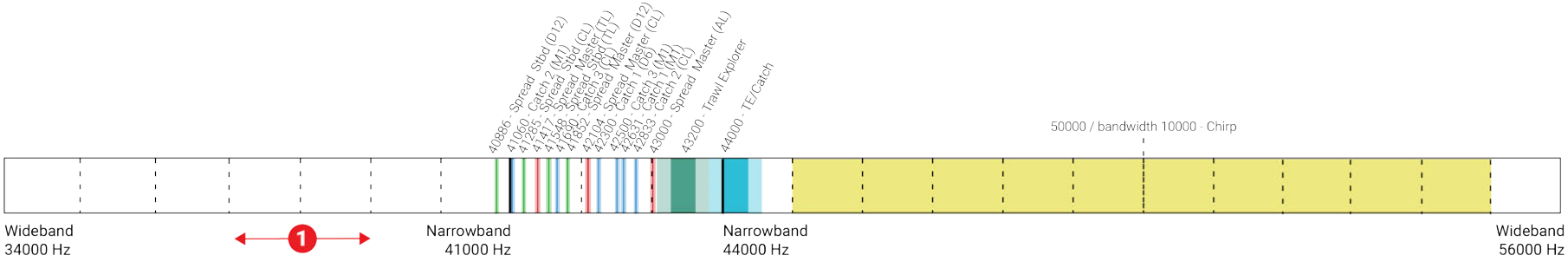
Examples of frequency allocations

- We recommend to allocate frequencies between 34 and 56 kHz for wideband hydrophones and between 41 kHz and 44 kHz for narrowband hydrophones.
- Echosounders are usually placed around 38 kHz, make sure to allow enough distance with them.

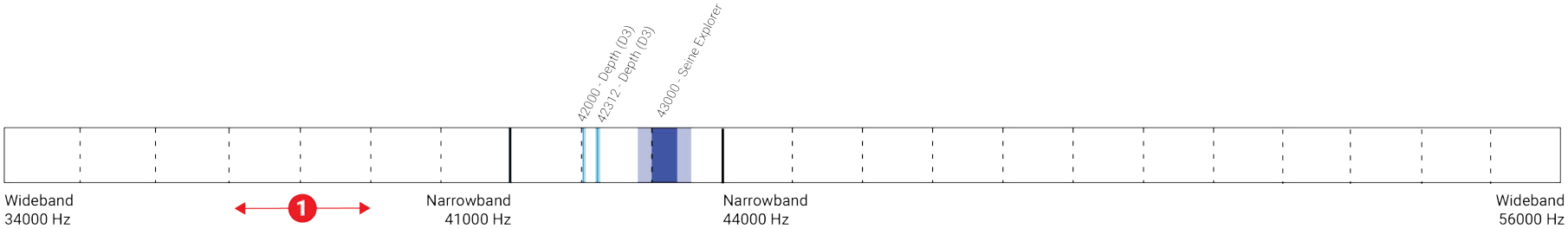
Example of a system with Spread, Catch, Trawl Speed sensors and Speed Explorer, Catch Explorer, HDTE and Door Sounder.



Example of a system with Spread sensors with positioning, Catch sensors, Trawl Explorer and Catch Explorer.



Example of a system for purse seining, with a Seine Explorer and depth Seine sensors.



Bandwidth

Mandatory distance with other sensors

1 Avoid allocating frequencies between 37 and 39 kHz because this range is generally used by echosounders.

Index

N

O

P

R

S

T

U

V

W