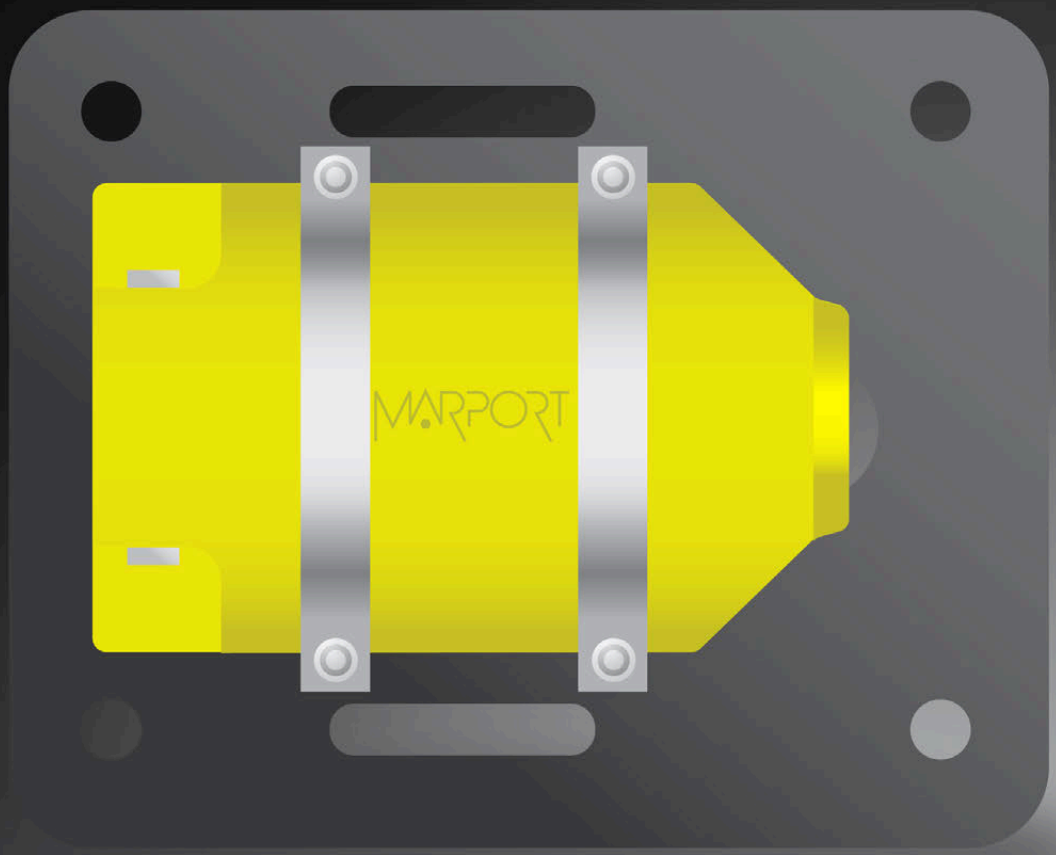
MARPORT | PRO

2024

TRAWL EXPLORER PRO

USER MANUAL



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Legal

History

V1	09/27/24	First release

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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: 02.13.x
- Scala2: 02.14.x

If you use other versions, the visual interface and options may vary.

Introduction and Presentation

Get a basic knowledge of the sensor.

Introduction

The **Trawl Explorer Pro** is part of Marport's latest generation of sensors, featuring significant upgrades from earlier models. These enhancements include compatibility with the latest Mosa2 and Scala2 software features, with the Dock smart charger, and higher-definition echogram images.

This sensor is your eye on the fishing gear. It can be placed on your trawl headrope or tunnel, in order to sen useful information to the wheelhouse.

Thanks to the sounder you will see:

- On the echogram : the trawl opening, fish entering the net and target strength values helping you to identify fish.
- Also on the echogram : the distance between the footrope and seabed to see if the gear touches the bottom.
- Depth data
- Temperature data
- Pitch and roll data
- Distance from the sensor to the seabed or footrope

The Trawl Explorer Pro can adapt to different types of fishing methods. For example, you can fully configure the sounding modes in accordance with your fishing method to have best results.

Safety Guidelines

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

Basic good practices

When using the product, be careful: strong impacts can cause damage to the electronic components inside.

Never place the product in a hazardous and/or flammable atmosphere.

Product installation and use

Install and use this product in accordance with this user manual. Incorrect use of the product may cause damage to the components or void the warranty.

Notice: Do not open the sensor bottle. Only qualified Marport technicians can do maintenance and repairs on internal components of the sensors.

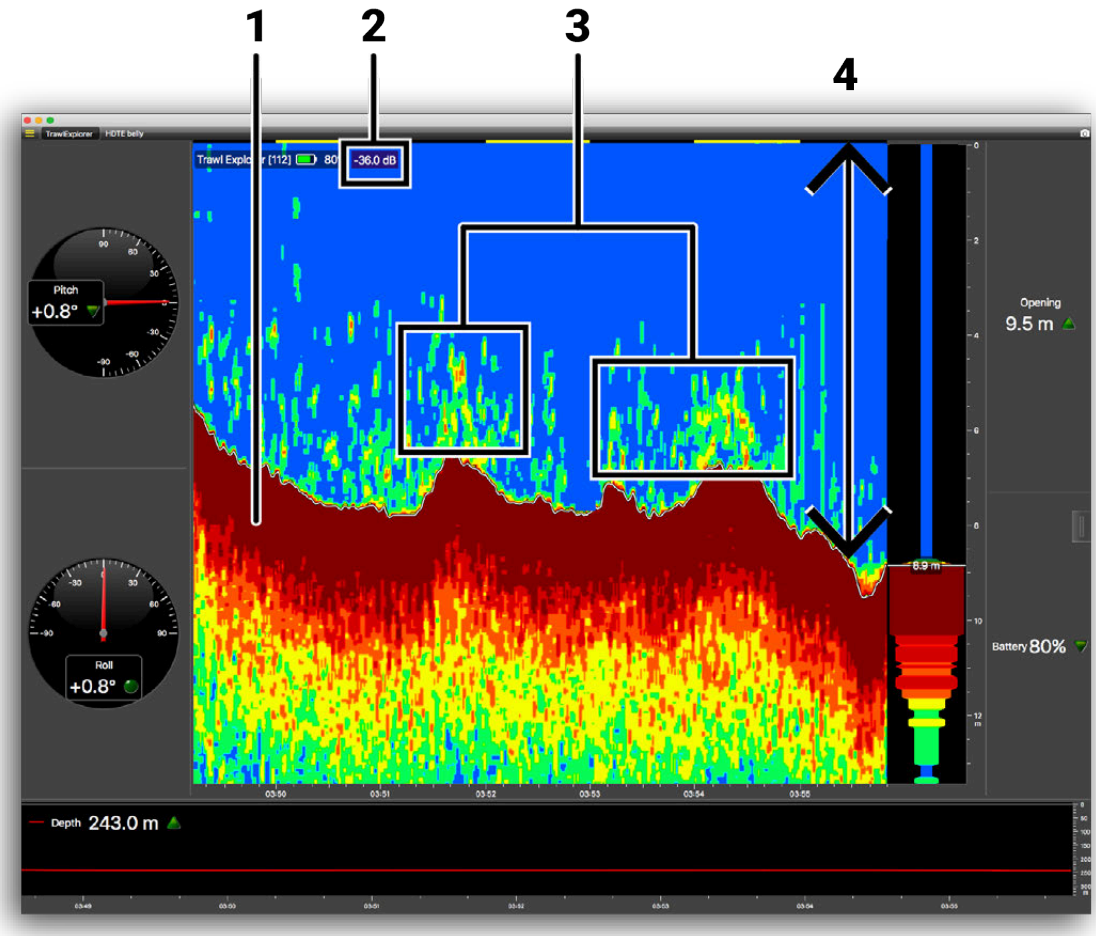
Precautions

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

Applications

This is an example of data received from a Trawl Explorer sensor and displayed in Scala2.

Trawl Explorer display from the trawl headrope



1	Sea bottom	**3**	Fish
2	Target strength	**4**	Trawl opening

Description

System Compatibility

The Trawl Explorer Pro is compatible with the following versions of Marport's software and equipment.

Mosa2	02.13.03 or later
Scala2	02.14.00 or later

Mx receiver firmware	08.06.00 or later
Dock	01.02.00 or later

Technical Specifications

Uplink frequency	30 to 60 kHz
Range to vessel	up to 2500 m[1]
Depth range	up to 1800 m
Sounder broadband frequency	Configurable between 120-210 kHz
Sounder range	5 to 160 m
Data update rate	Depth: 1-8 sec. - Temp/Battery/Height/Pitch&Roll: every 6 sec.
Echogram update rate	Up to 3 images/second
Pitch angle	±90°
Roll angle	±180°
Pitch & roll accuracy	±0.1°
Depth resolution	0.1m with 0.1% accuracy
Temp measurement range	-5° C to +25° C
Temp accuracy	±0.1° C
Battery type	Lithium-Ion
Typical battery life:	30-75 hours (up to approx. 35 hours for the mini Trawl Explorer)[2]
Charging time	4 hours[3]
Weight in air (with housing)	• Standard : 16 kg • Mini : 5 kg
Weight In water (with housing)	• Standard : 4,1 kg • Mini : 0.9 kg
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

Beamwidth

Beamwidths for uplink pings:

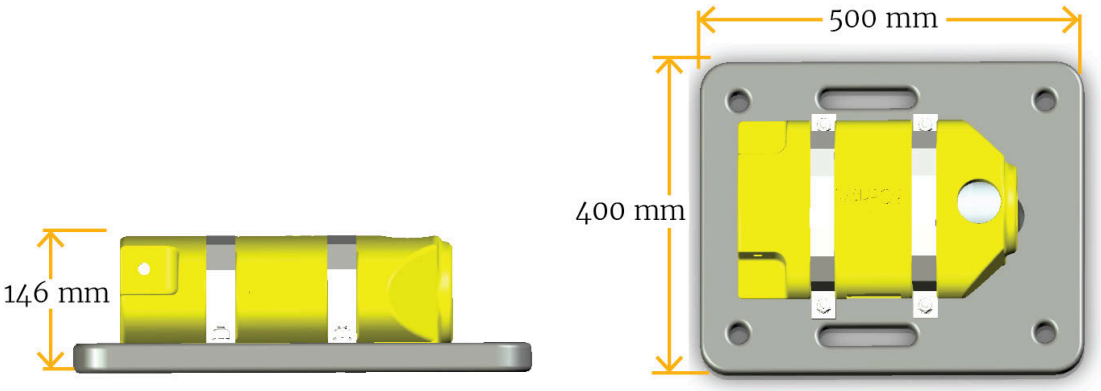
Beamwidth	@ 35 kHz	@ 50 kHz	@ 60 kHz
-3dB	46°	40°	30°

Beamwidths for up and down pings:

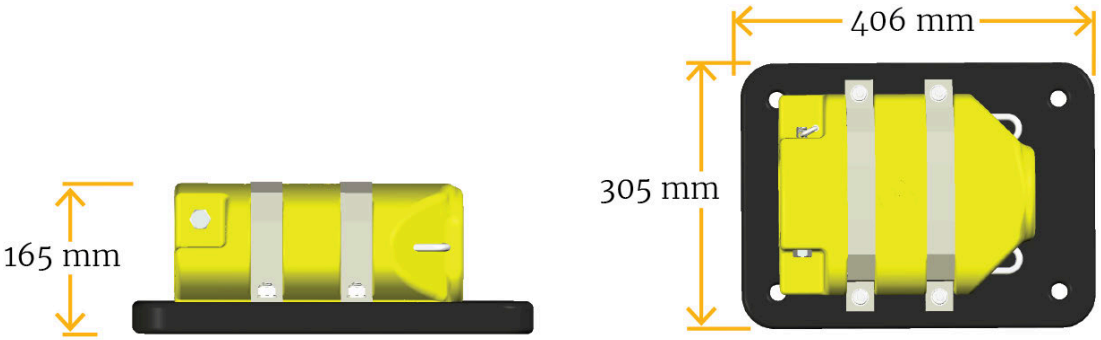
Beamwidth	@ 125 kHz	@ 160 kHz	@ 200 kHz
-3dB	26°	24°	22°

Outline dimensions

Trawl Explorer



Mini Trawl Explorer



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: F450-02.03.01 and after

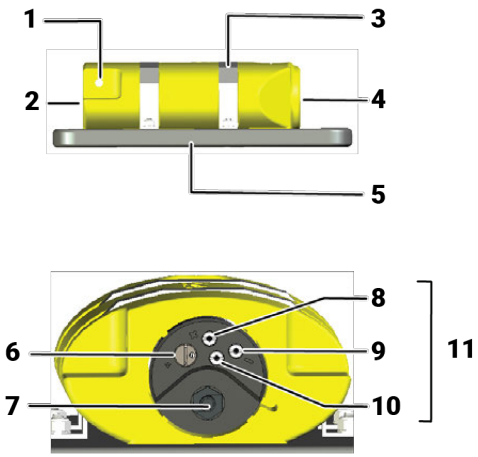
Features and Options

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

Features	• **Product name**: manually entered. • **Application**: Trawl Explorer • **Body**: Stubby, XL • **Battery capacity** (not configurable): 1-pack if Stubby, 2-pack if XL
Sounding Options	• Down (always activated) • Up • Down2
Misc. options	• **Memory Card Log**: records a log of the sensor activity. This option is useful for troubleshooting support.
Measures	• Battery (always activated) • Pressure (depth) • Temperature • Pitch • Roll • Height

Main Parts

External View



1. Retainer screw

2. Model/serial number

3. Metal strap

4. Transducer

5. Stabilizer board

6. Pressure sensor

7. Temperature sensor

8. Positive charge

9. Negative charge

10. Water switch

11. Shoulder bolts

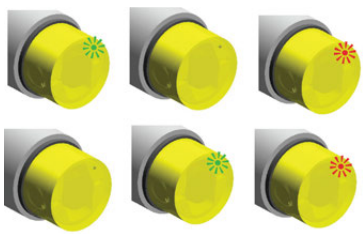
CAUTION:

- 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.	

State	Situation	LED
		• 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. • LED is fixed red after 10 sec. if connected to a charger other than the Dock.
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

Learn how to configure the sensor settings.

Note: This guide refers to the following versions of **Mosa2:** 02.13.x. If you use another version, the visual interface and options may vary.

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

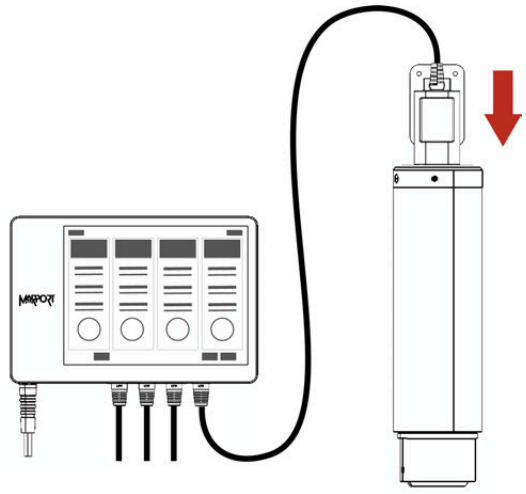
Connecting the Sensor to Mosa2

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

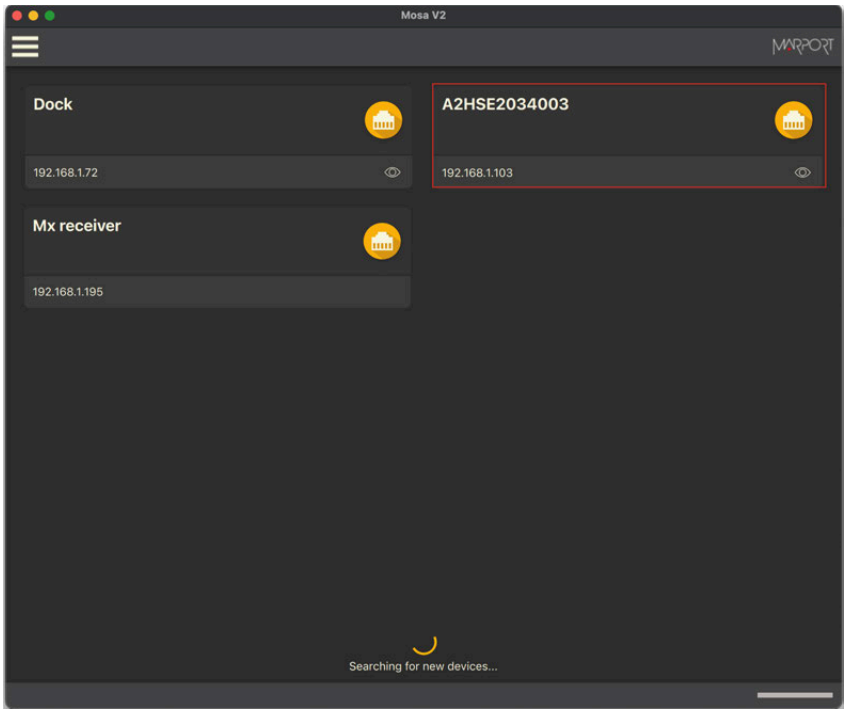
Using a Dock Charger Plug

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

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



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



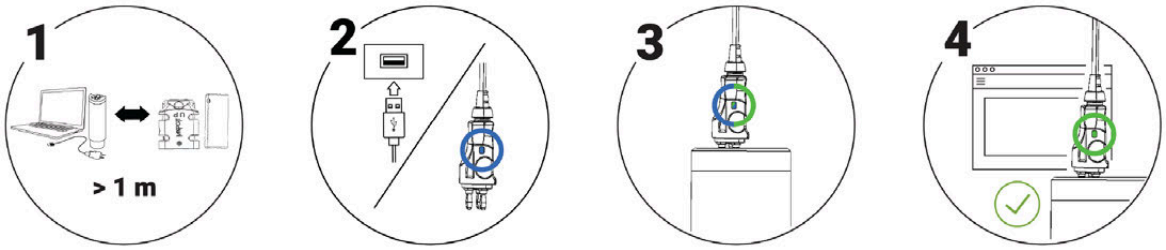
- Click to open the sensor configuration page.
- Click to show the deploy animation on the charger plug for 30 seconds.

Using the Configuration Cable

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

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

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.

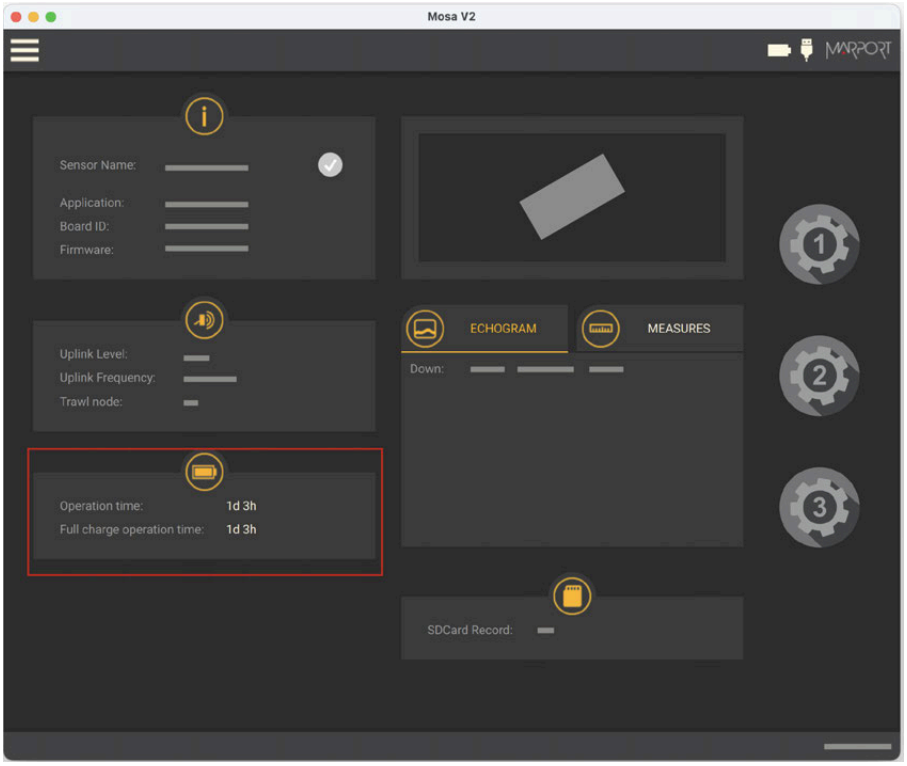


You can now configure the sensor.

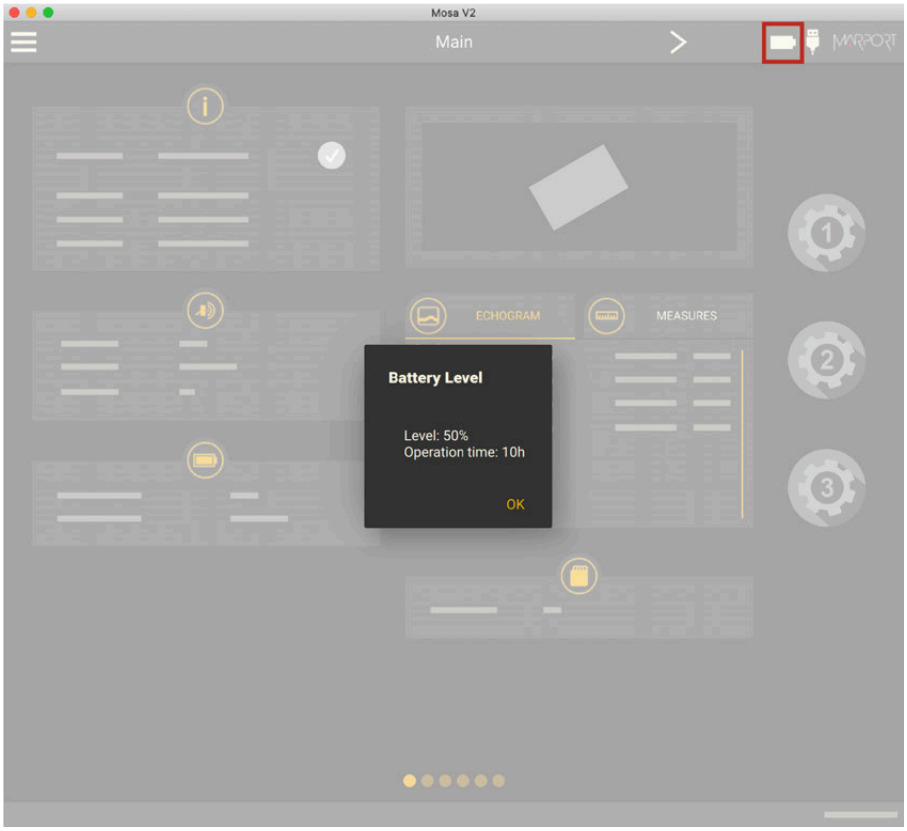
Note: You can keep the Configuration Cable continuously connected by USB, and virtually eject or connect it. When no sensor is connected to the Configuration Cable, click **Menu** **> Eject Config Plug** or **Connect Config Plug**. When ejected, you come back to the discovery page. It stays disconnected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

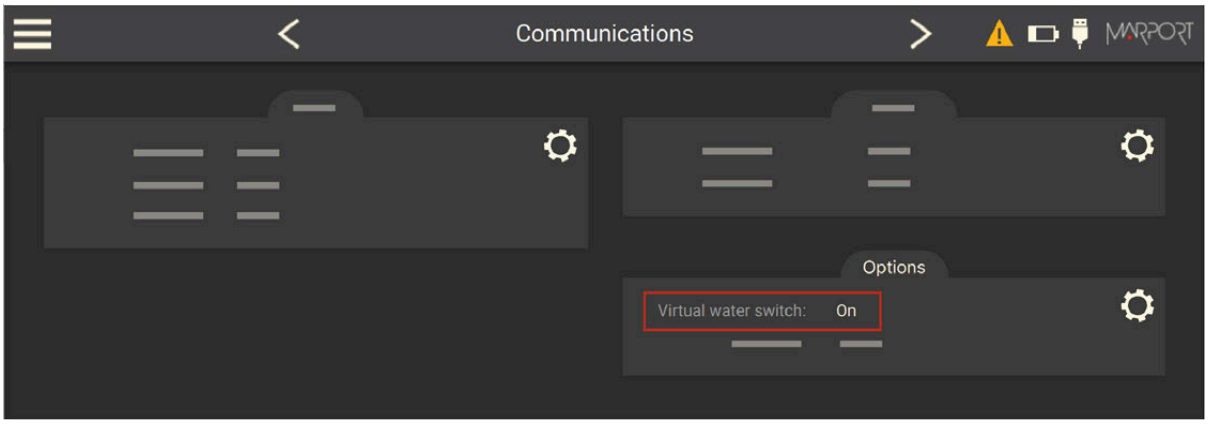


Note: When you change settings such as the uplink power or sounding range, it affects the battery consumption and remaining lifetime. The battery information will update after the sensor has been switched on and operating for 10 minutes.

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.

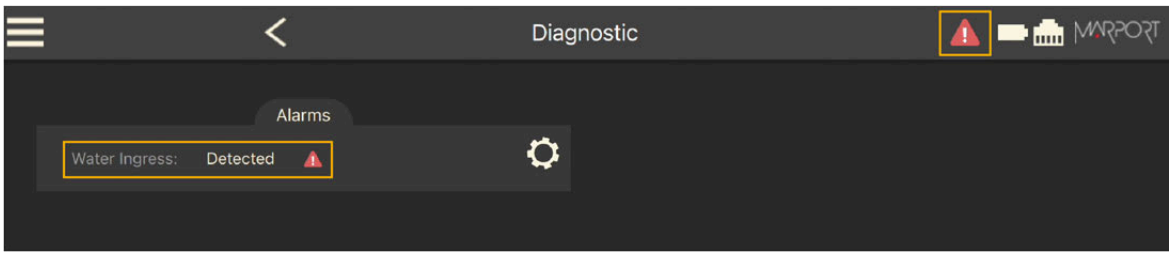
  We recommend to deactivate it if the sensor is operating close to the surface or if you need to test the sensor in the office.

Diagnostic Information

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

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

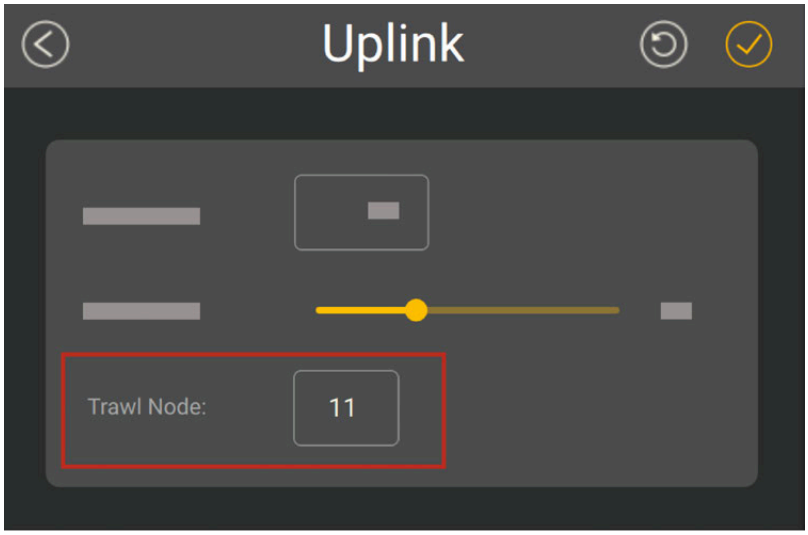
You need to give a trawl node to the sensor. It is the number corresponding to the position of the sensor on the trawl.

The trawl nodes corresponding to the positions on the headline and footrope are the following:

Trawl number	**Node numbers**
Trawl 1	10 to 17
Trawl 2	110 to 117
Trawl 3	210 to 217
Trawl 4	310 to 317

Trawl number	Node numbers
Trawl 5	610 to 617

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 (on page 37)**. 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.

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

2. Choose a communication protocol.
   - NBTE V4: latest protocol, for A2S sensors.
   - Select previous versions if the sensor needs to be compatible with versions of the Mx receiver earlier than 08.03.04.
3. Enter a frequency for the communication with the vessel. Default is 44,000 Hz.
4. 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**
33%	Works for most conditions.
100%	◦ Sensor is far from vessel - e.g. more than 800 m depending on conditions, high depth ◦ High level of interferences

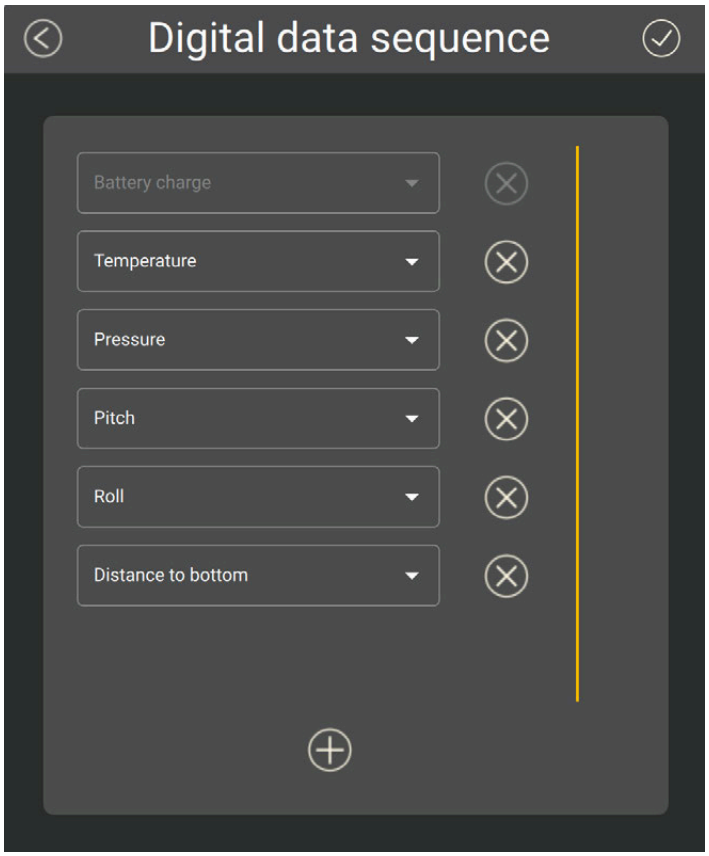
Recommended uplink powers	Conditions
	◦ Issues receiving data ◦ Low SNR

5. In **Refresh Rate**, leave **Fast** selected.

Configuring Data Sending Sequence

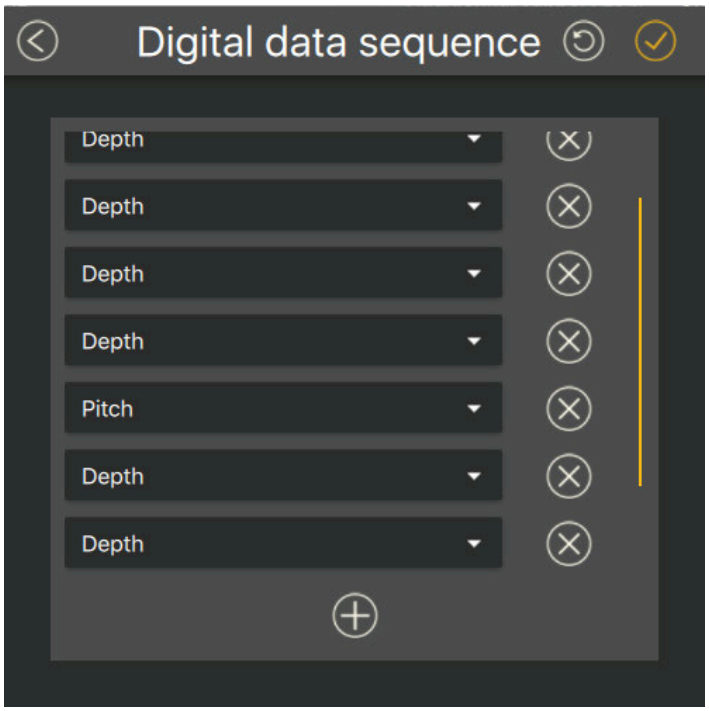
You can configure the order and types of measurements (e.g. temperature, pitch, roll...) sent to the receiver.

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. To activate True mode display, enter a sequence corresponding to the following order: 4 x Depth / 1 x any data / 4 x Depth / 1 x any data, etc.



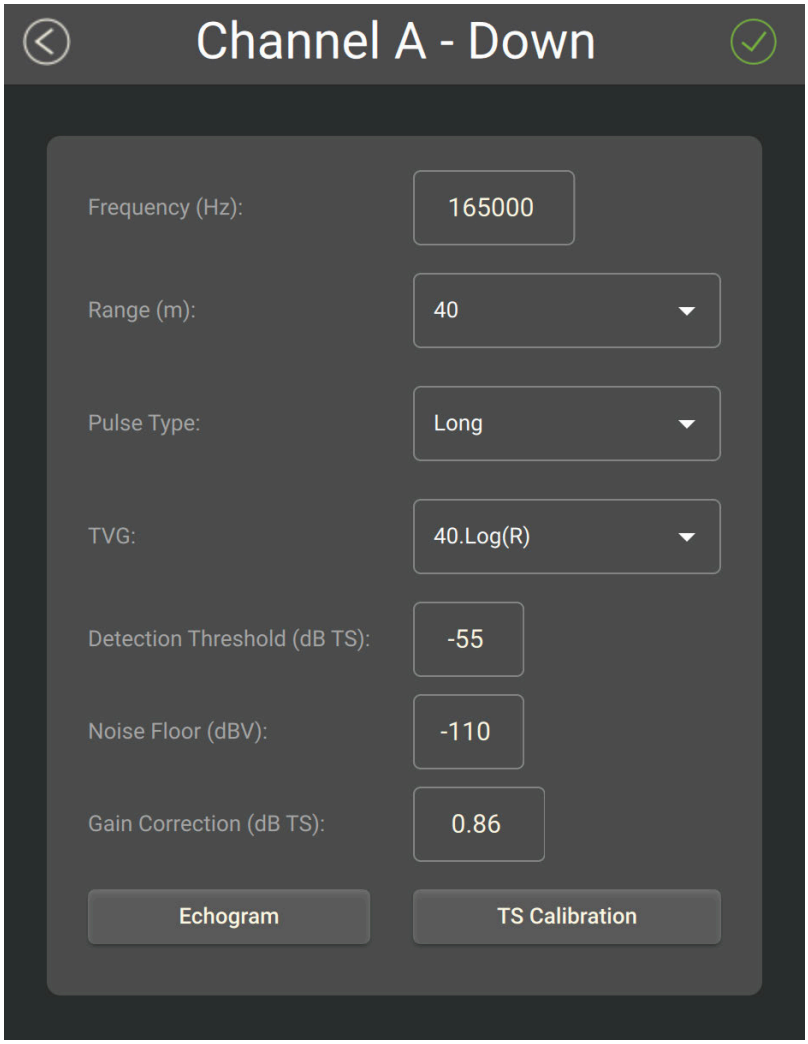
6. Click ✓.

Configuring the Echo Sounder

Configure the echo sounder settings of the Trawl Explorer.

1. Go to the **Echo Sounder** page.
2. To select the direction of the sounding, click ⚙ in **Sounding Mode**, then choose a **Mode** between **Down only**, **Up** or **Down + Down2** (choices depend on activated options). **Down + Down2** option allows you to compare two different settings on the down sounding (for example, 2 ping lengths or 2 frequencies). The sensor will send two consecutive pings toward down direction.

3. Go back to the page, then click in front of the sounding direction, depending on the **Sounding Mode** that was configured.



4. Leave default **Frequency (Hz)** at 165,000 Hz. If you have an XXL bottle, set the frequency to 100,000 Hz.
5. Set the **Range (m)** of the sounding according to 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.

Note: 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.

6. If you want the range of the down sounding to automatically change to 20 m when the bottom is closer, see **About the Automatic Range Mode (on page 26)**.
7. 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.

8. 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 the bottom, footrope or a school of fish.
    - 40 log: focus on individual targets.
    - 30 log: compromise between the two others.
9. Set the **Detection Threshold (dB TS)** to -79 if you want to detect small targets. Otherwise, leave the default settings at -73 dB.
10. Do not change the other echo sounder settings.

About Time Variable Gain

TVG (Time Variable Gain) is a method that compensates signal loss in the water. Basically, the aim is to have targets or sea bottom displayed in the same color on the echogram, whatever the distance from the sensor.

When the sounder sends pings, the deeper the target is, the more attenuated signals will be received and sent back. As a result, if the signal is too much attenuated, echoes (target strength) received from a target might not be as strong as they should be. TVG is here to compensate this effect. It uses a lower gain level when signals travel toward a target at a small distance and higher gain level when signals travel toward deeper targets. The end result is to compensate sounding attenuation and therefore to show a same target strength for a same target at different depths.

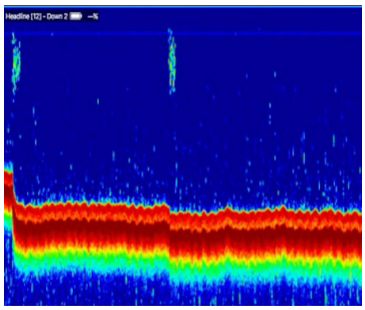
You can choose between three different TVG modes:

- 20 log: focus on the bottom, footrope or a school of fish.
- 40 log: focus on individual targets.
- 30 log: compromise between the two others.

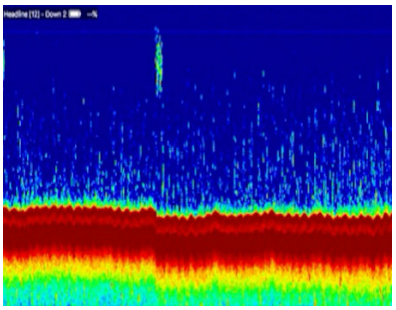
For example, if you want a good view of the footrope, select a TVG mode at 20 or 30 log. You can see on the images below that the footrope is clearer at 20 and 30 log.

If you want a good view of individual targets, you can see that with 40 log, targets in the water column are clearer.

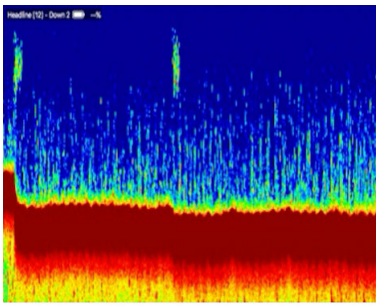
20 log



30 log



40 log



About the Automatic Range Mode

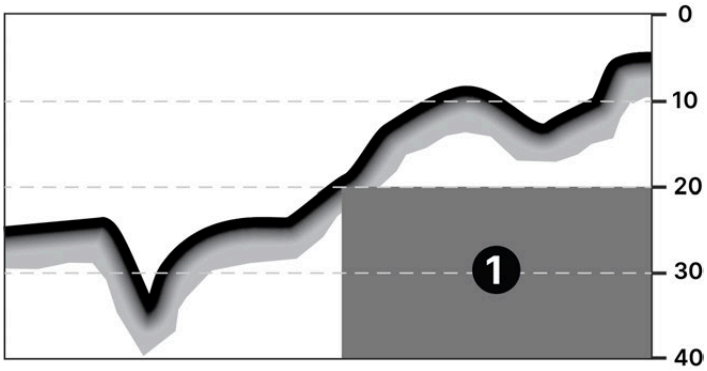
The sensor has an automatic range mode that is useful to get better quality echograms when the trawl is close to the bottom.

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:

- 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.
- **Automatic Range** must be activated.

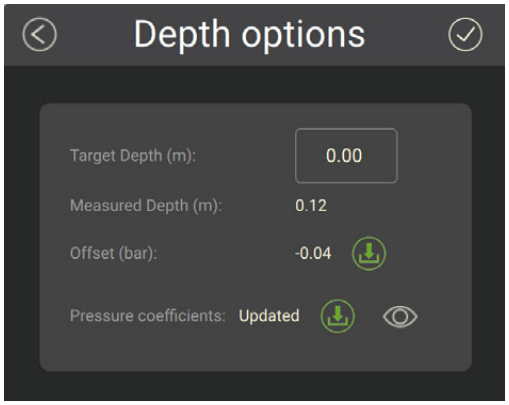
Note: The trawl opening value sets the minimum distance to see inside the trawl. As a result, if the trawl opening distance is equal or higher than 18.5, the sensor will not reduce the range to 20 meters.

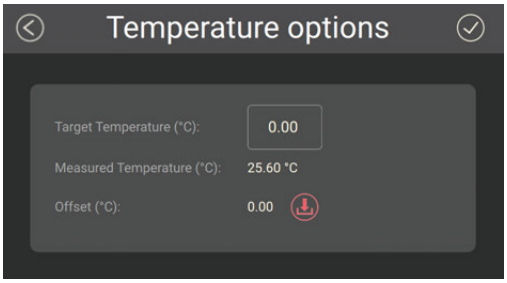
See **Configuring the Echo Sounder (on page 23)** for details about Mosa2 settings.

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.

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).
4. About the pressure coefficients: you do not need to upload this file, the coefficients are directly included in the application file downloaded from MASP. Note that if you replace the pressure sensor, you need to change the sensor in MASP and upload the application file again.

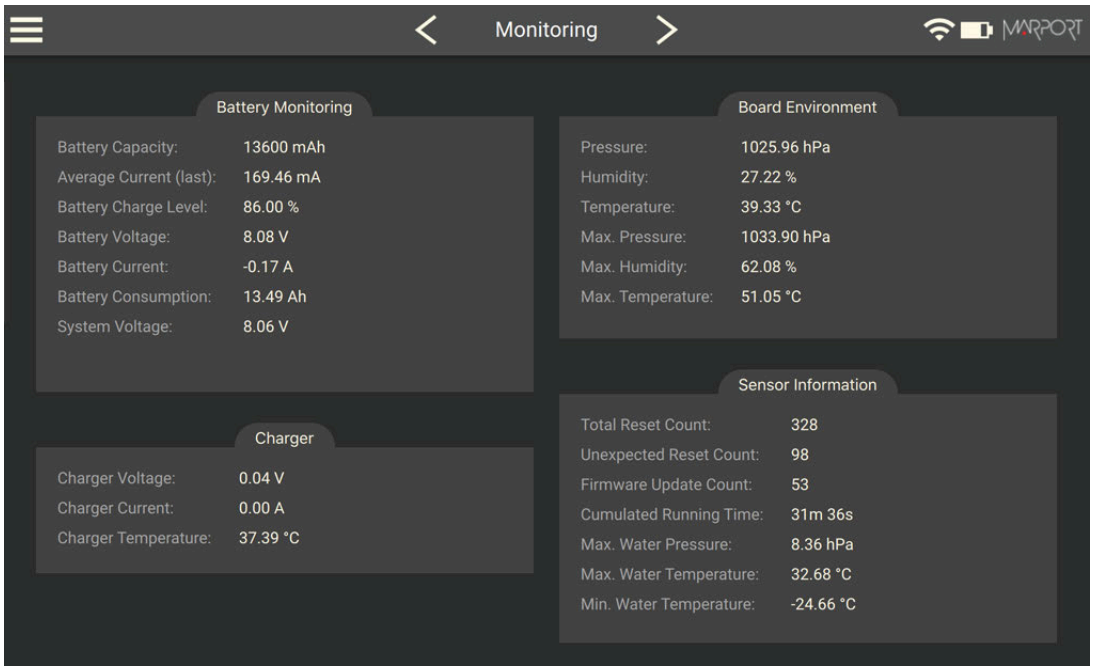
Testing Measures

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

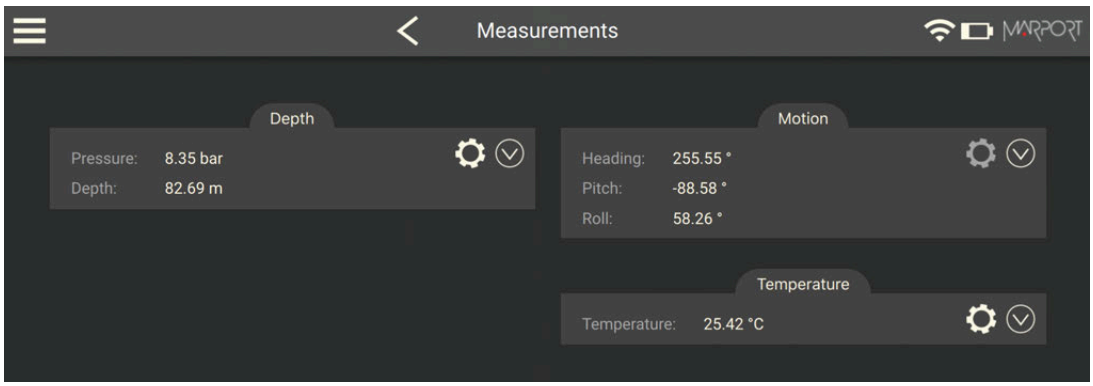
You can test the sensor in water or in air. In air, the following measures will be wrong: height, conductivity.

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.

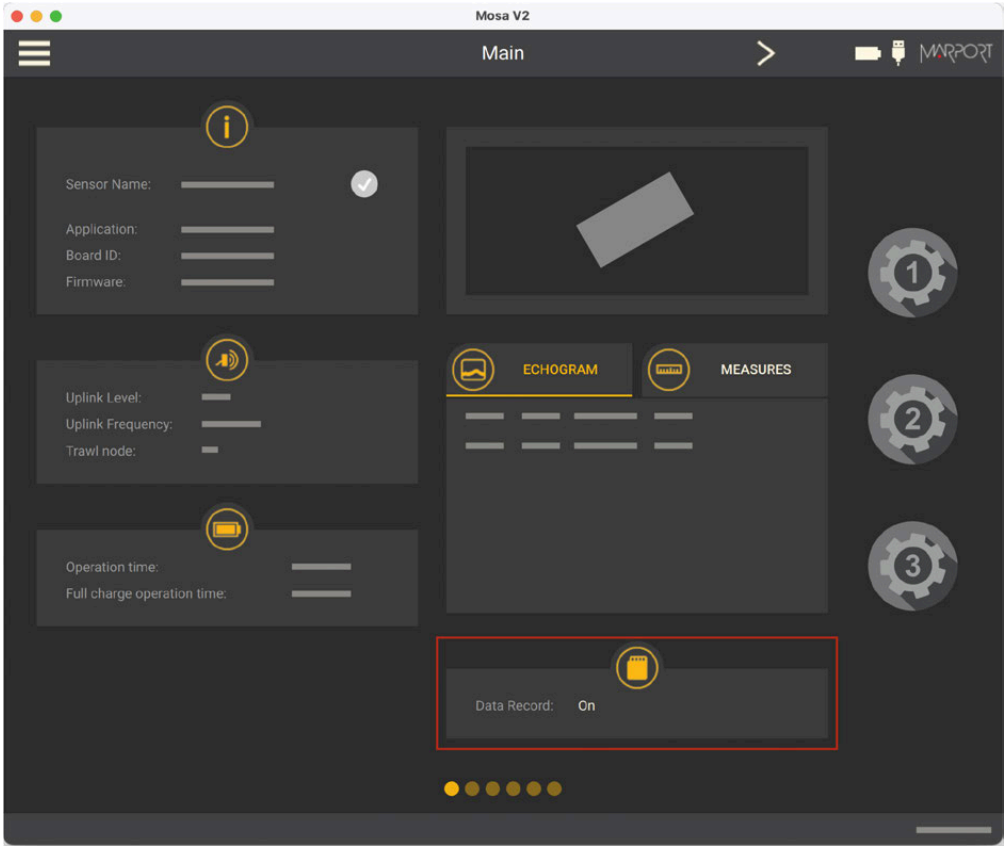
Memory Card Recording

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

Overview

Data recorded on the sensor memory card are in higher resolution, with a higher refreshing rate. For sensors with echograms, you can see target strength values without uplink sound transmission loss.

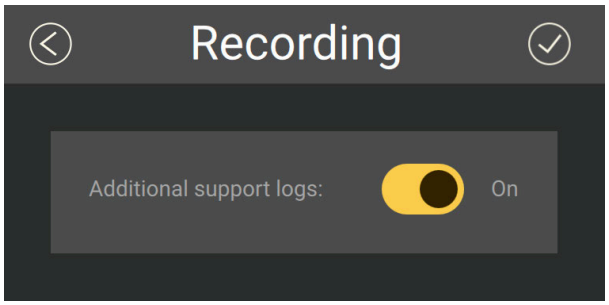
You can see on Mosa2 main page if the memory card recording feature is activated:



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

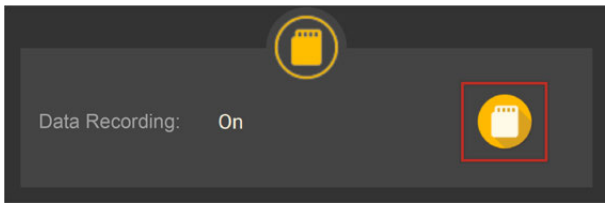
The last 99 recorded sensor data files and last 99 battery files are displayed. Two types of files are on the memory card:

- 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.

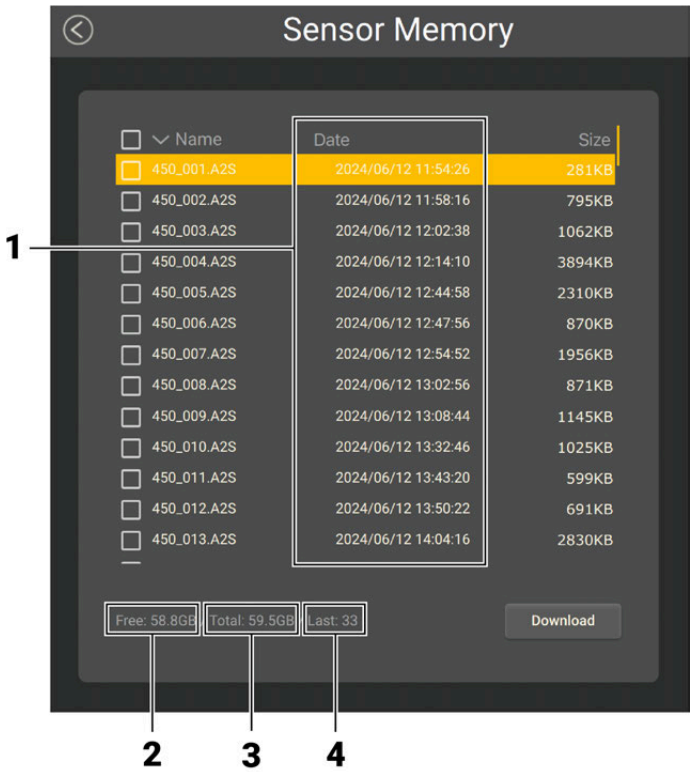
Note: The first time the sensor connects to Mosa2 or if the sensor desynchronizes, a clock with a warning icon is displayed in the top toolbar. Click it to synchronize the time of the memory card with the computer's time.

Note: When downloading the files, we recommend to connect the sensor to Mosa2 using the Dock or the Configuration Cable for a better transfer of data.

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 43)** to learn how to replay these data in Scala2.

Saving a Configuration on Mosa2

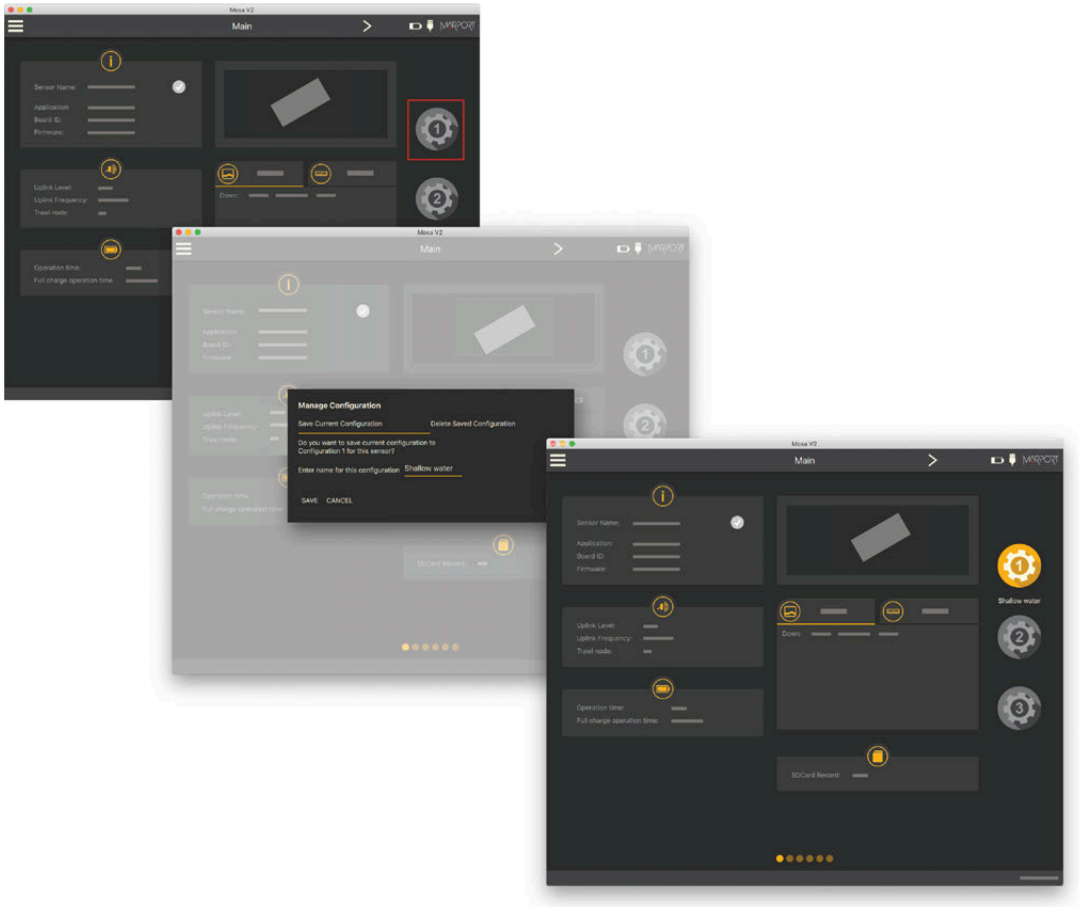
You can save different configurations of the sensor to be able to quickly change the configuration when you change your fishing method.

- You have finished configuring the sensor.

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:

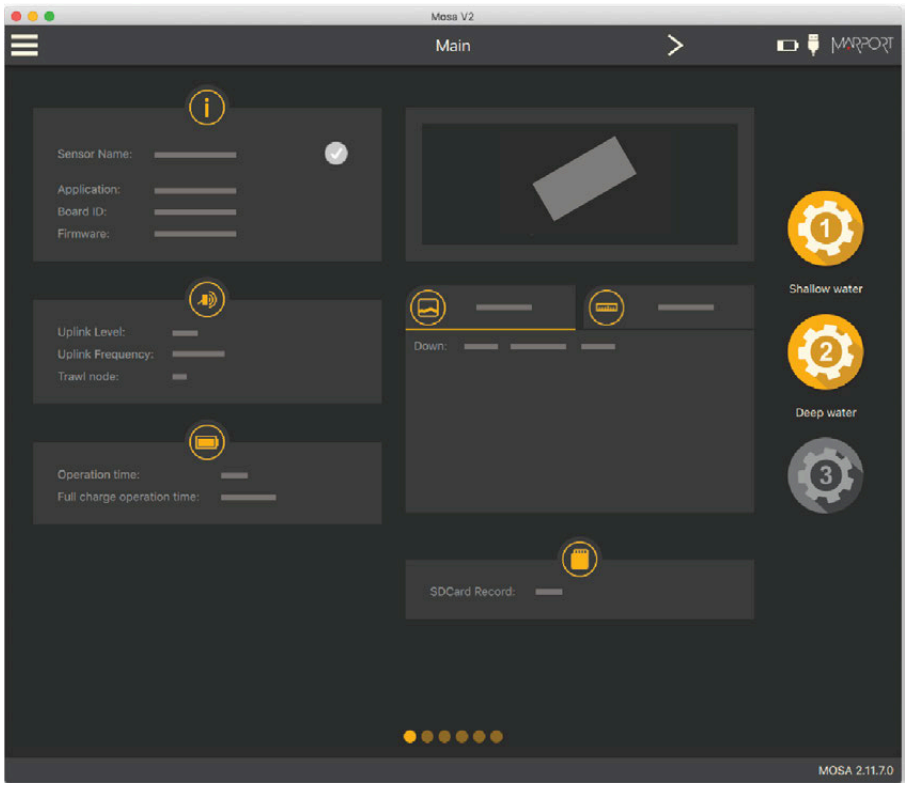
- If fishing in shallow water, you can use a configuration with an uplink level of 33%, a short pulse and a short range.
- If fishing in greater depths, you can change for a configuration with an uplink level of 100%, a long pulse and a long range.

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**.

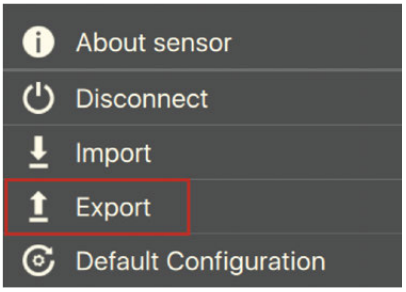
Exporting Sensor Configuration

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

- You are finished configuring the sensor.

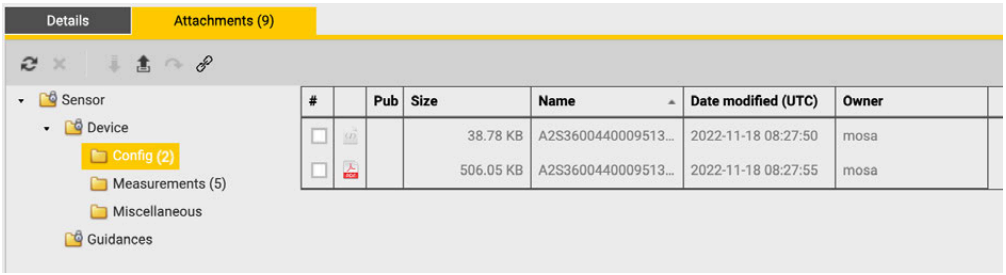
If you have issues with your sensor, send this file to support teams.

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



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

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

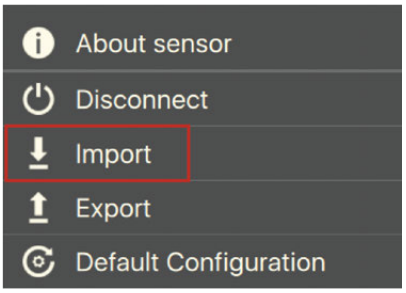
You can apply to a sensor a configuration that has already been made on another sensor.

- You have exported a configuration (see **Exporting Sensor Configuration (on page 34)**) and have the *.A2C or XML configuration file.

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.

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.

The configuration is loaded into the sensor.

System Configuration and Display

Learn how to configure the receiver to be able to receive and display Trawl Explorer data.

Note: This guide refers to the following version of Scala2: 02.14.x. If you use another version, the visual interface and options may vary.

Adding the Sensor to the Receiver

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

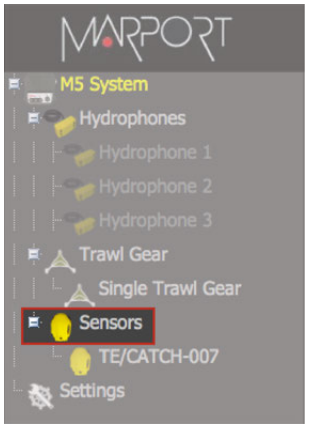
For compatibility details, see **System Compatibility (on page 7)**.

Adding the Sensor to the Receiver

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

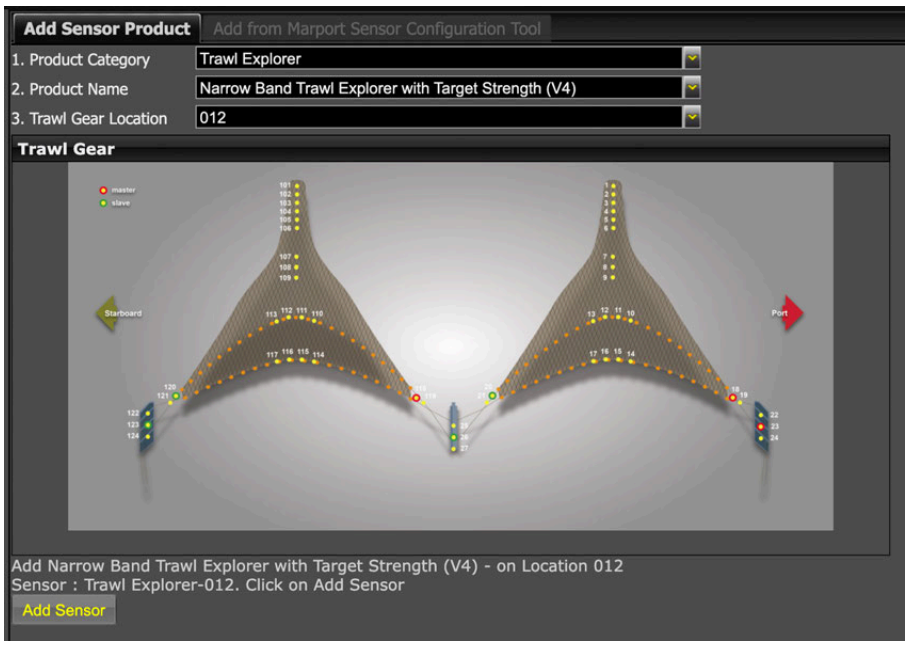
Important: To be able to add your sensor to the receiver, make sure your receiver version is compatible. Check **System Compatibility (on page 7)**.

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**: Trawl Explorer
- **Product Name**: Narrow Band Trawl Explorer with Target Strength (V4)
- **Trawl Gear Location**: same as defined in Mosa2 (see **Configuring the Trawl Node (on page 19)**).

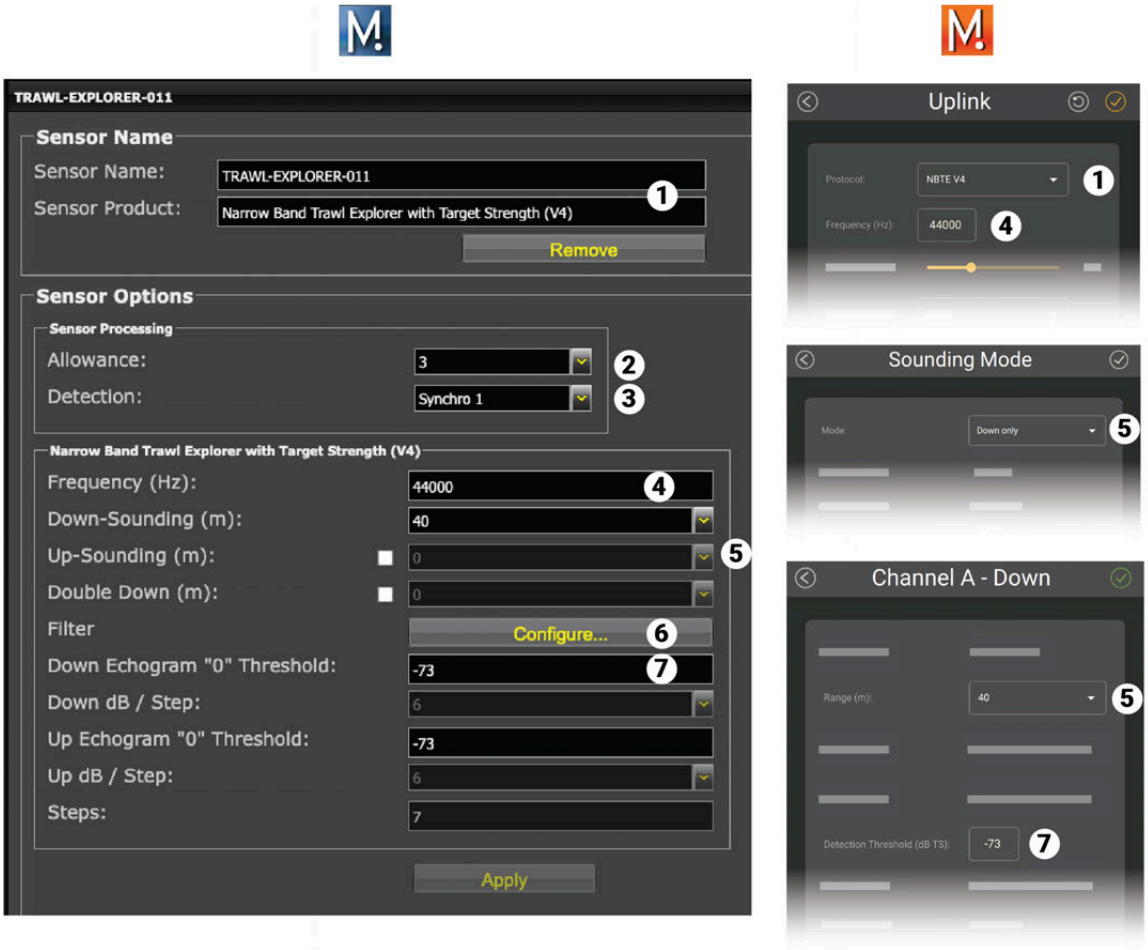


5. Click **Add Sensor**.
   The sensor is added to the receiver and displayed on the left side of the screen. The configuration page is displayed.

Configuring 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. The version of the communication protocol must correspond to what was set in Mosa2.
2	This setting helps detecting the signal of the sensor among other sensor or echosounder signals. Change default setting only if you have issues receiving data. • Choose between **0** and **2** only if no interferences on the vessel (not recommended). • **3** is default setting. • Choose between **4** and **6** if you have issues receiving data. It allows you to receive more data, but be aware they might be wrong data.
3	This setting also helps detecting the sensor signal. Leave default setting at Synchro 1.
4	Enter the same frequency as the one entered for the uplink frequency in Mosa2.

5	Select the same sounding direction and range as those set in Mosa2.
6	Click **Configure** to change filters applied on incoming data. Filters are particularly useful to reduce interferences on the echogram data. **Tip:** Please refer to Scala2 user guide for more information about the filters.
7	Enter the same detection threshold as set in Mosa2.

Click **Apply** when you have finished.

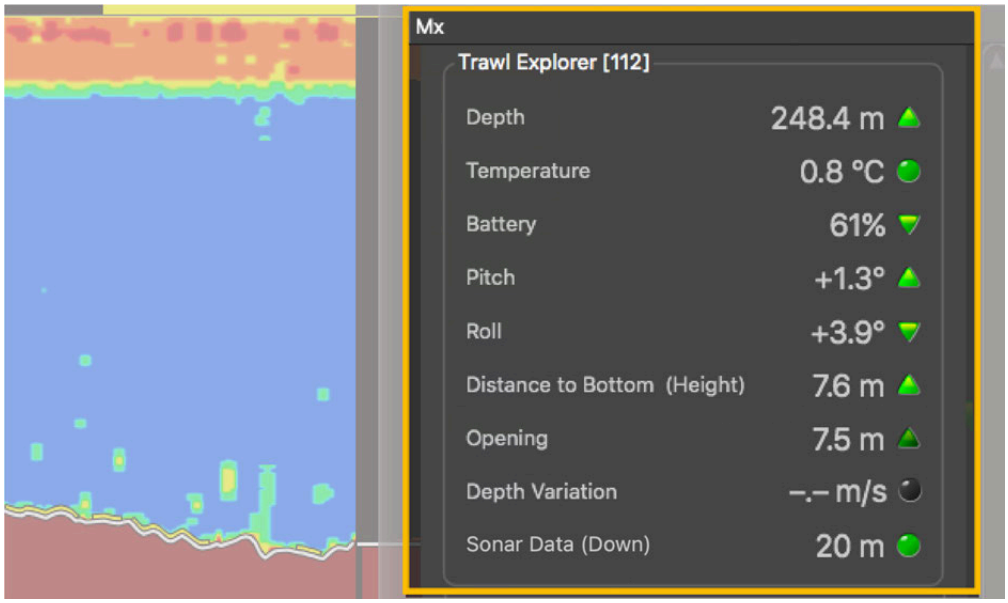
What to do next

Configure the positioning settings if the sensor has the positioning option.

Configuring Data Display in Scala2

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

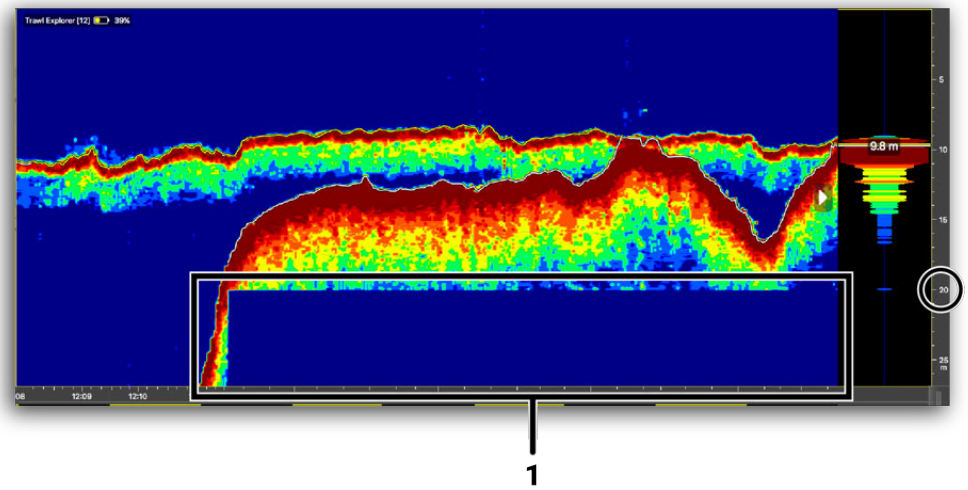
1. From the top left corner of the screen, click **Menu** **> Customize** and enter the password `eureka`.
2. Open the control panels and go to the **Mx** tab.



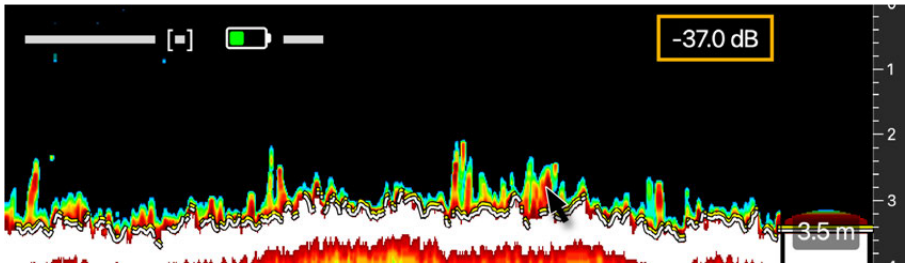
Note: Data displayed (e.g. depth, temperature, pitch & roll) depends on the sensor's features that are enabled.

3. To display the echograms, click + hold **Sonar Data** from a Trawl Explorer sensor and drag it to the page display.

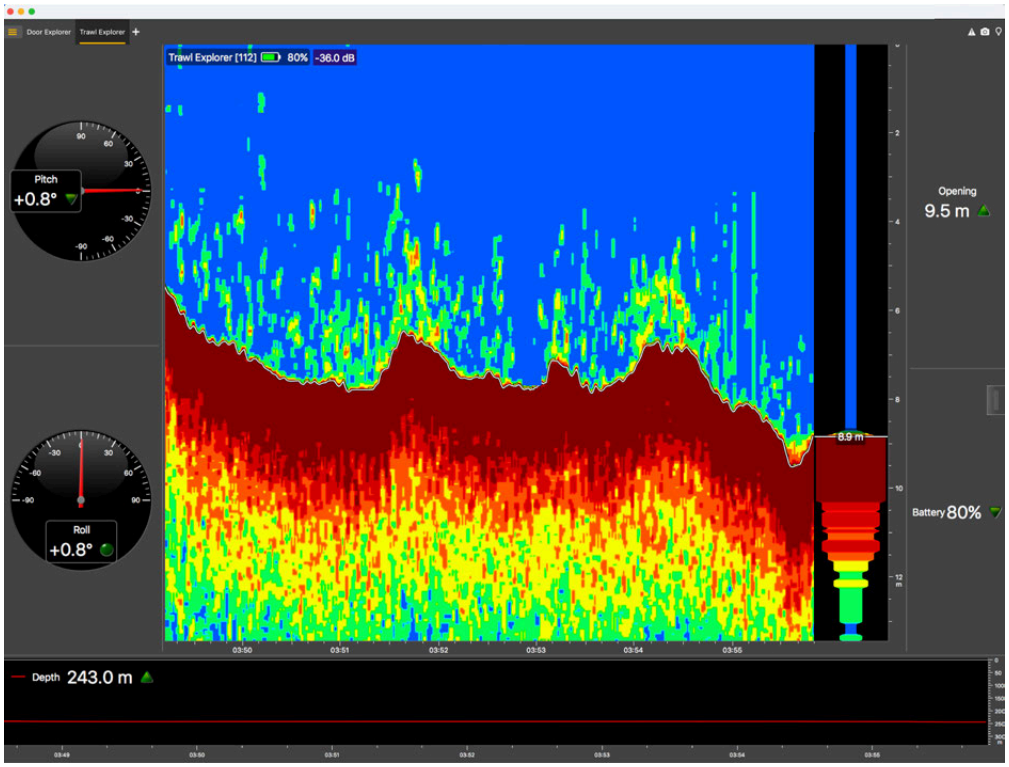
4. If the automatic range mode is activated (see **About the Automatic Range Mode (on page 26)**), the echogram range automatically changes to 20 meters when the distance to the bottom becomes lower than 20 meters (**1**). This way, the echogram displays better quality images when the distance to the bottom is shorter. Echogram images will be displayed like the example below:



5. Hover the mouse over the echogram to display the target strength of the detected targets. The higher is the target strength, the bigger the target is.

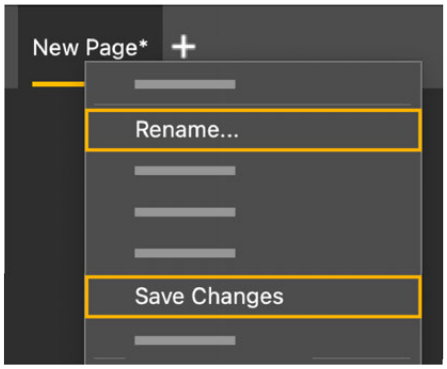


6. Click + hold other data, such as depth, pitch, roll, and drag it as well to the page display.
7. Select the type of display.
8. Drag the lines around the blocks of data to resize them.
9. Right-click the title or the values of the data to display customization options.
   Example of a Trawl Explorer data page:



10. To save the changes you made:

a. To rename the page, right-click the name of the page and click **Rename**.
b. To save the page, right-click the name of the page and click **Save Changes**.



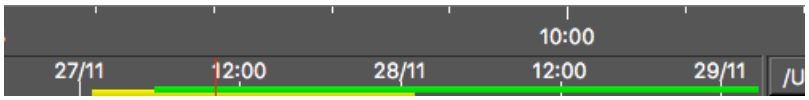
11. Deactivate the Customize mode when you have finished customizing pages: click **Menu** **> Customize** again.

Replaying Data Recorded on a Memory Card

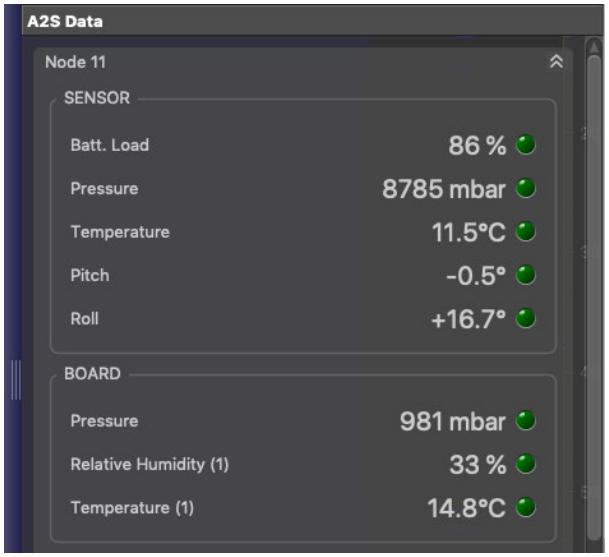
In Scala2, you can replay data that has been recorded in high definition on the sensor memory card.

Note: Data in high definition is available only when downloading it from the sensor memory (A2S files). Data received in Scala2 will have a lower definition (SDS files).

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 was received in live is displayed in the **Mx** panel and data recorded on the SD card is displayed in the **A2S Data** panel.



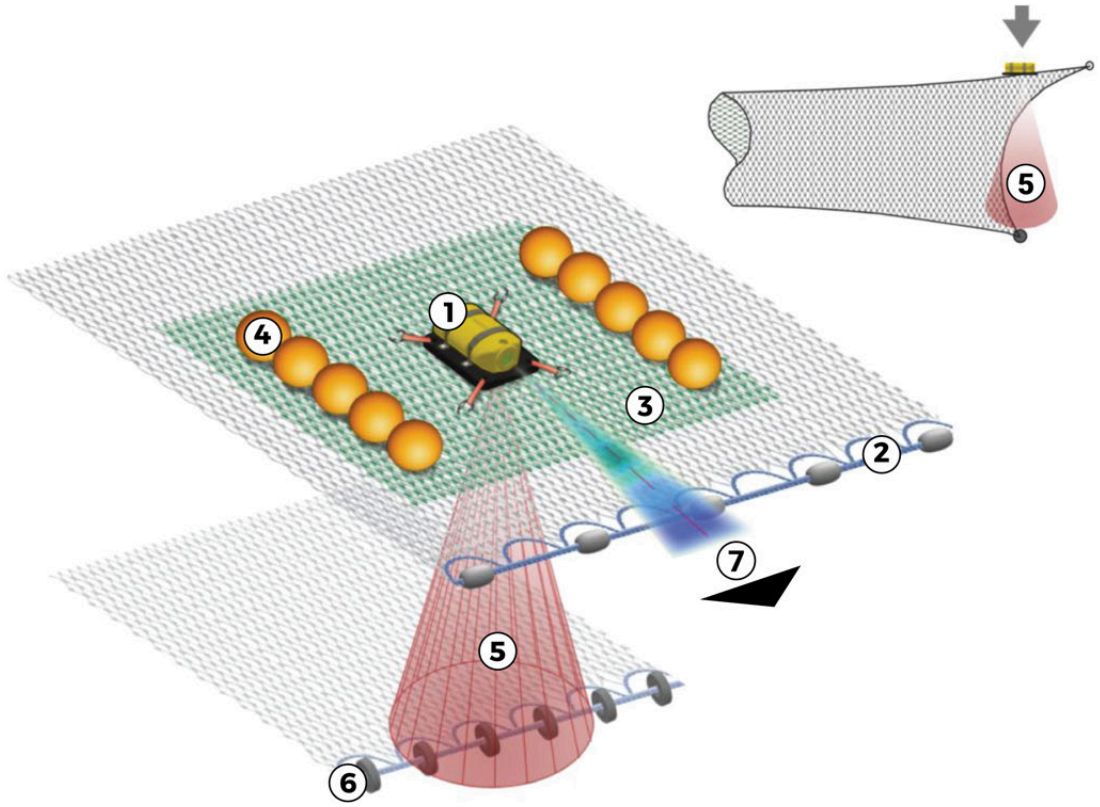
3. Go to the control panels, then click and drag data from the **A2S Data** panel to a page.

Installation

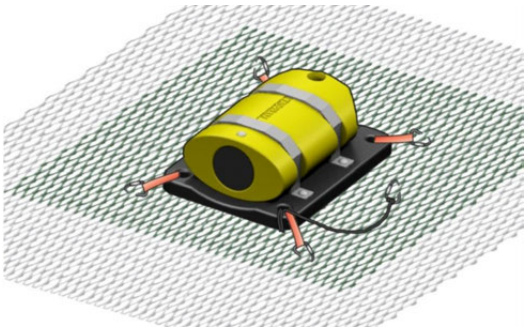
Learn how to install the sensor on the trawl gear.

Installing a Trawl Explorer on the Trawl

We recommend to install the sensor on the headrope in order to see the trawl opening and fish entering the trawl. You can also install it on the trawl tunnel to see fish going toward the codend.



1. Place sensor (**1**) at the centre of the net's headrope (**2**), facing the vessel.
2. Install a double-mesh piece of netting (**3**) to stabilize the sensor.
3. Buoys (**4**) on either sides provide a level platform for the unit during trawling operations.
4. Buoys ensure that down-looking transducer beam (**5**) is vertical for footrope (**6**) detection.
5. The signal is oriented toward the vessel (**7**).



We recommend you to use a netting bag placed on a suitable location in the net. Use a safety line between one of the sensor's attachment lugs, as shown in the picture. The safety line should be a steel wire with fitted small shackles at either end.

Important: Sensors not properly secured may be lost during fishing operations.

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.

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

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

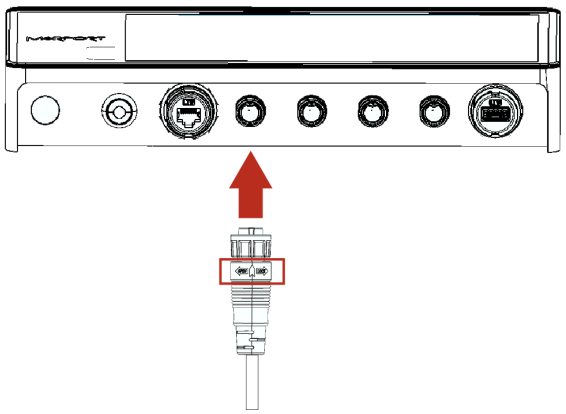
Note: For Dock products with serial number before DOC2400000: Do not leave the sensors connected on a charger that is switched off. If the charger is not connected to the mains voltage, the sensor switches on and this will drain the battery.

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.

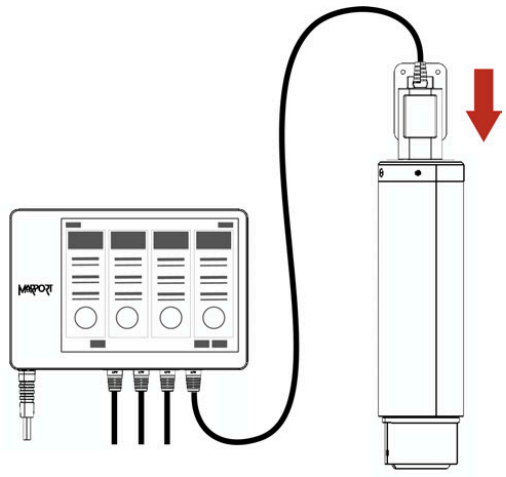
1. Before charging the sensor: wash with fresh water and dry the sensor. This prevents corrosion of the charging pins.

   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.



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.

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 48)** 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.

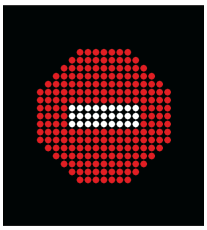
- Switch on the sensor by activating the water-switch, then listen for a ping noise and check if you see the LED switched on.
- Test the sensor measures with Mosa2: depth, temperature, pitch, roll, and if applicable: spread distance, echogram, catch status, speed measures (using the EM log tester).
-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

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.

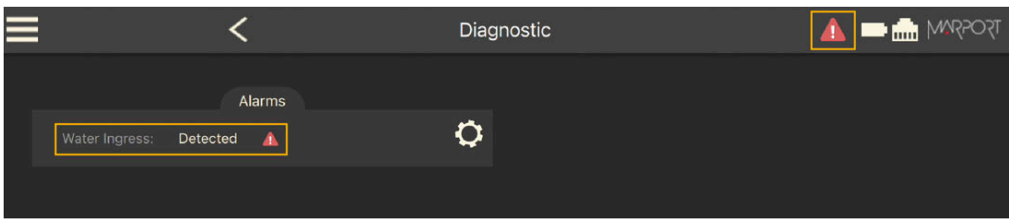


➜ The shoulder bolts are dirty or damaged.

- 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.

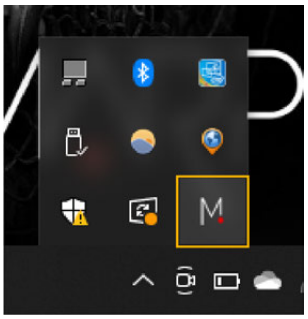
Sensor does not connect correctly with Mosa2 when using the Configuration Cable

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.

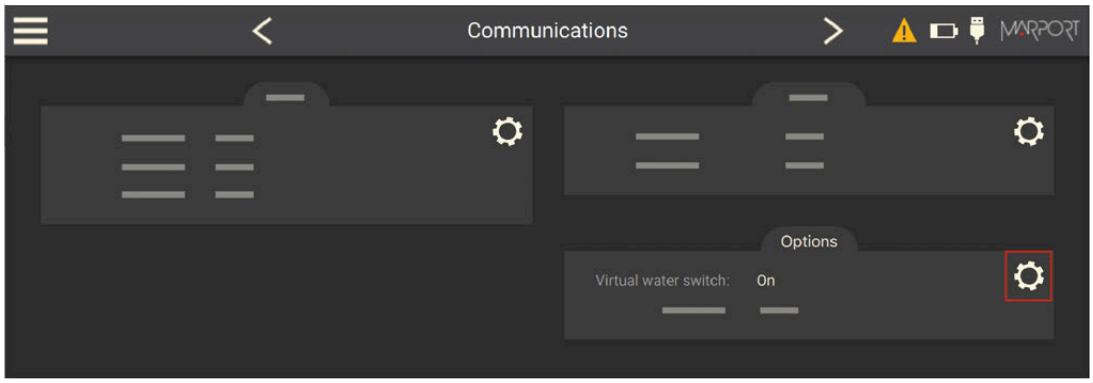
The sensor is not running when testing out of water

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.

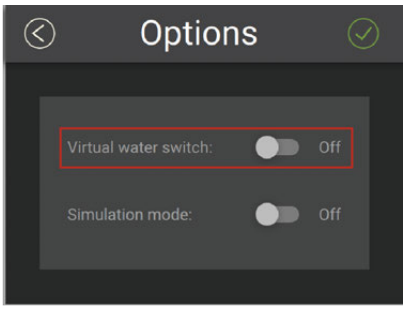
➜ The virtual water switch option may be activated in Mosa2. When this option is activated, the sensor runs only at a depth more than 2 meters. For more details, read **About the Virtual Water Switch Option (on page 18)**.

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.



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:

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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.

Boat & Channel Codes

This list shows the standard frequencies for PRP telegrams. When you configure boat codes, make sure to respect the correct interval between frequencies (see table above).

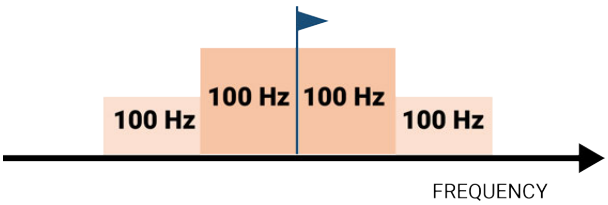
Codes		
BC/CH	Frequency	FID (Scanmar)
C-1/CH1	42833	45
C-1/CH2	41548	32
C-1/CH3	41852	35
C-1/CH4	40810	25
C-1/CH5	42500	42
C-1/CH6	43200	49
C-2/CH1	42631	43
C-2/CH2	41417	31
C-2/CH3	41690	33
C-2/CH4	40886	26
C-2/CH5	42300	40
C-2/CH6	43100	48
C-3/CH1	42429	41
C-3/CH2	41285	30
C-3/CH3	41548	32
C-3/CH4	40970	27
C-3/CH5	42100	38

C-3/CH6	43000	47
C-4/CH1	42226	39
C-4/CH2	41852	35
C-4/CH3	41417	31
C-4/CH4	41160	29
C-4/CH5	42700	44
C-4/CH6	43300	50
C-5/CH1	42024	37
C-5/CH2	41690	33
C-5/CH3	41285	30
C-5/CH4	41060	28
C-5/CH5	42900	46
C-5/CH6	43400	51
C-6/CH1	39062	3
C-6/CH2	39375	7
C-6/CH3	39688	11
C-6/CH4	40000	15
C-6/CH5	40312	19
C-6/CH6	40625	23
C-7/CH1	38906	1
C-7/CH2	39219	5
C-7/CH3	39531	9
C-7/CH4	39844	13
C-7/CH5	40156	17
C-7/CH6	40469	21

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...)

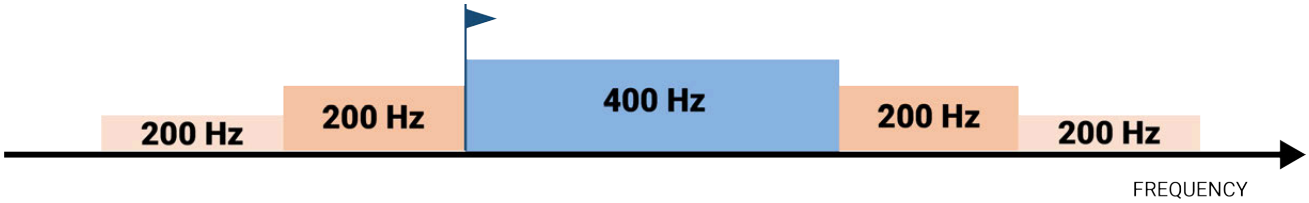


Example: If the frequency of the sensor is 40kHz, there should be no sensors between 39.9 and 40.1kHz.

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

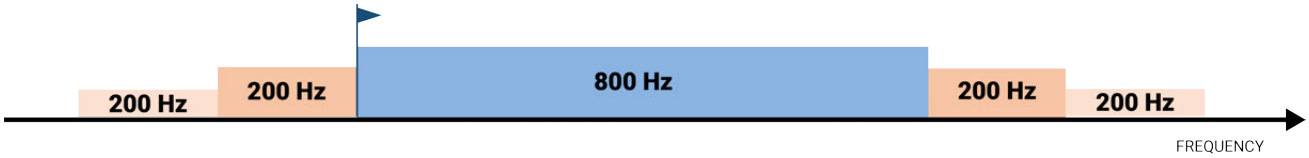
Example: If the frequency of the sensor is 40kHz, there should be no sensors between 39.8 and 41.2kHz.

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

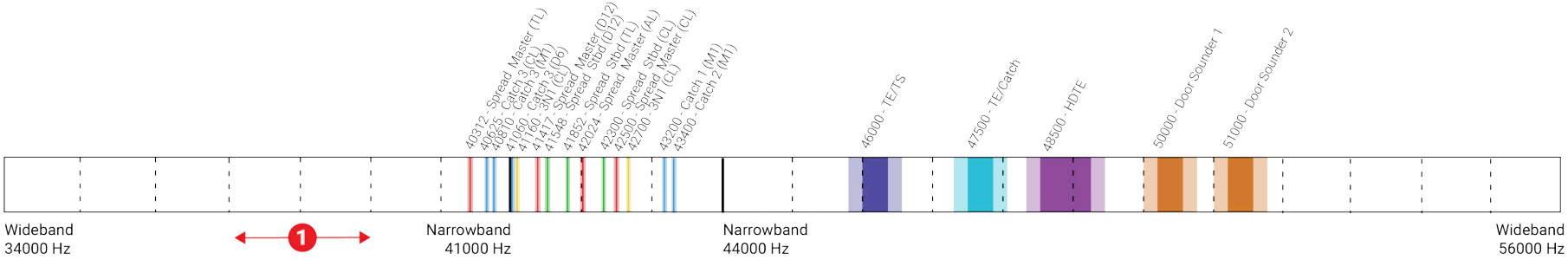
Mandatory distance with other sensors

Recommended distance with other sensors

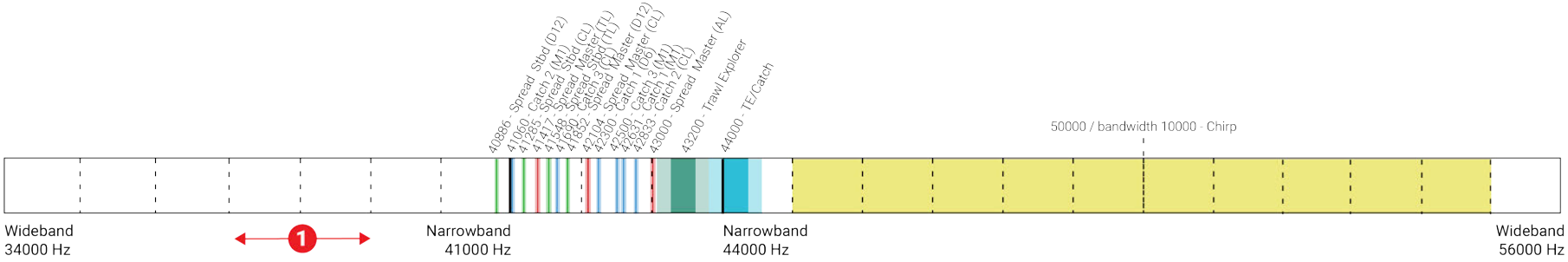
Examples of frequency allocations

- 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.

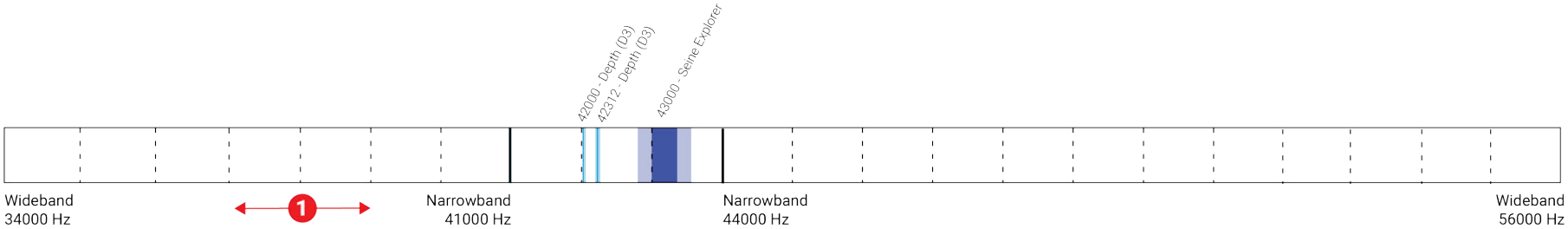
Example of a system with Spread, Catch, Trawl Speed sensors and Speed Explorer, Catch Explorer, HDTE and Door Sounder.



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.

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