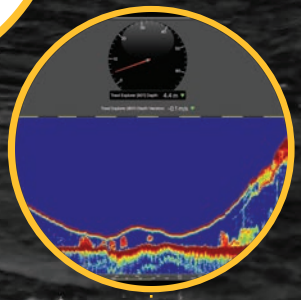
Seine Sensors User Manual



MARPORT

Contents

Legal

History

V1	03/09/18	First release
V2	07/06/18	• New troubleshooting topic: Sensor cannot connect in wireless connection on page 59 • Interference Check on page 50: more detailed information about **Spectrum** page.
V3	11/30/18	• Frequency Plan on page 64: drawings have been changed, frequencies are now allocated between 34 kHz and 36 kHz and frequency ranges of narrowband and wideband hydrophones are indicated.
V4	07/16/20	Now documents Mosa2 version 02.03, Scala version 01.06.34 and Scala2 version 02.02.
V5	10/01/20	Technical Specifications on page 11: the typical battery life is now specified separately for SE50 (depth) and SE100 (height).
V6	03/08/21	• Now documents Mosa2 version 02.05. • Connecting the Sensor to Mosa2 on page 16: added guidance on how to connect sensor to Mosa2 using the Configuration Cable product. • Added troubleshooting topic: Sensor does not connect correctly with Mosa2 when using the Configuration Cable on page 60 • Added details on the **Down 1 + Down 2** sounding mode in Configuring the Uplink, Up (Side) and Down Settings on page 20. • Added contact details for the sales offices in South Africa and Norway in Support Contact on page 63.

V7	07/05/21	• Now documents Scala2 version 02.04 and Mosa2 version 02.07. • In Technical Specifications on page 11, corrected the battery lifetime of the Seine Explorer. • Replaced term Configuration Plug by Configuration Cable. • Connecting the Sensor to Mosa2 on page 16: Updated distance between other electrical devices and the computer: 1 m instead of 50 cm. •
V8	08/04/22	• Now documents Scala2 version 02.10.x and Mosa2 version 02.11.x. • Added guidance about connecting the sensor to Mosa2 using the Configuration Cable and Dock in Connecting the Sensor to Mosa2 on page 16. • Added guidance about charging the sensor with the Dock in Charging the Sensor on page 55. • Replaced DealerWeb website by Marport Authorized Service Provider (MASP). • Added contact details of the sales office in United Kingdom, and updated contact details of Iceland sales office.

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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:

- Scala: 01.06.06-01.06.34 / Scala2: 02.10.x
- Mosa2: 02.11.x

Patents apply to products. U.S. Patents 9,772,416; 9,772,417

Introduction and Presentation

Read this section to get a basic knowledge of your Seine sensor.

Tip: Click Marport logo at the bottom of pages to come back to the table of contents.

Introduction

The Seine sensor is mounted on the lead line of a purse seine in a robust protective steel framed housing. It relays data back to the wheelhouse from the moment the purse seine is shot away and during the fishing operation. It has an omnidirectional uplink signal, which ensures that there is no loss of signal during the fishing operation.

There are different Seine sensors:

- Seine sensor with depth.
- Seine sensor with depth and temperature
- Seine sensor with depth, height and temperature.
- Seine Explorer with temperature, depth, height, battery and echogram.

During the shot, depending on your type of Seine sensor, you can see the depth of water above the lead line, the distance from the lead line to the seabed (height) and an echogram of the area below the lead line. On most recent models, there is also an echogram of the contents of the purse seine during its descent. Measuring the depth at rapid time intervals provides the user with an accurate descent rate of the lead line.

When purse seining in shallow water, Marport's Seine sensors are an essential tool to ensure the gear is kept at a safe distance from the seabed. This way, you can avoid damage to the gear.

Seine sensors with depth only or with depth, height and temperature can send depth and temperature data to a Scanmar system. There is also a version of Seine sensors with depth and temperature that is compatible with Simrad PI systems.

Note:

Scala

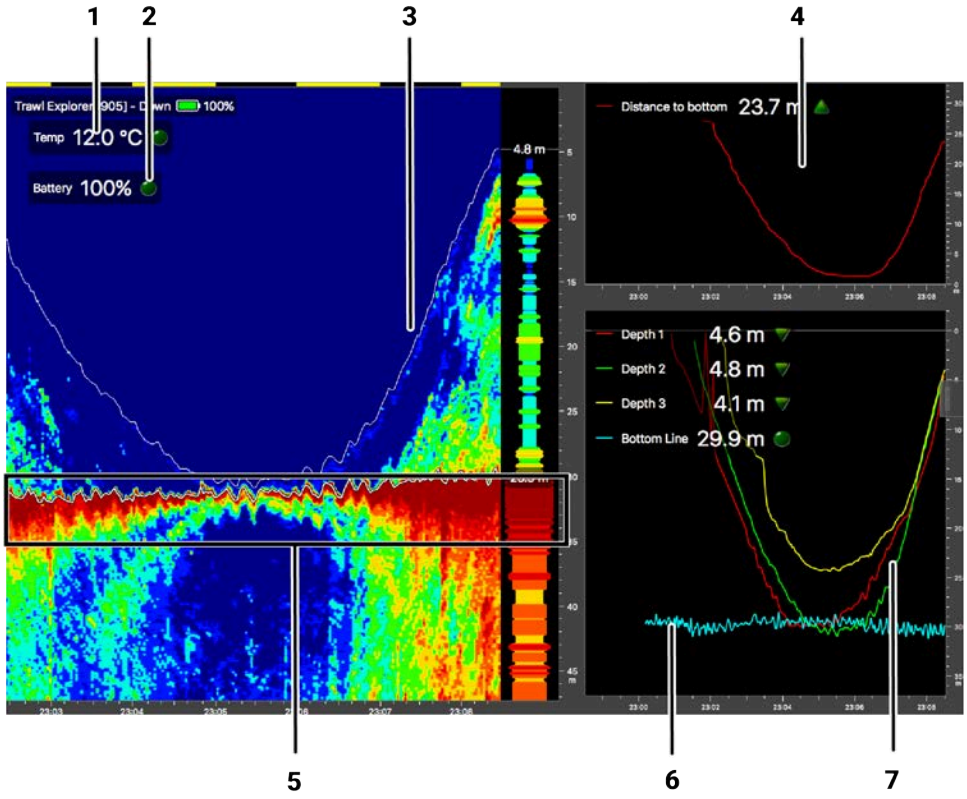
Scala2

These labels tag topics or actions that are specific to Scala and/or Scala2. Depending on the version you have, you may follow either one of these labels.

Applications

Here are some examples of data received from Seine sensors displayed in Scala/Scala2.

Seine Explorer and Seine sensors with depth and height



1. Temperature

2. Battery level

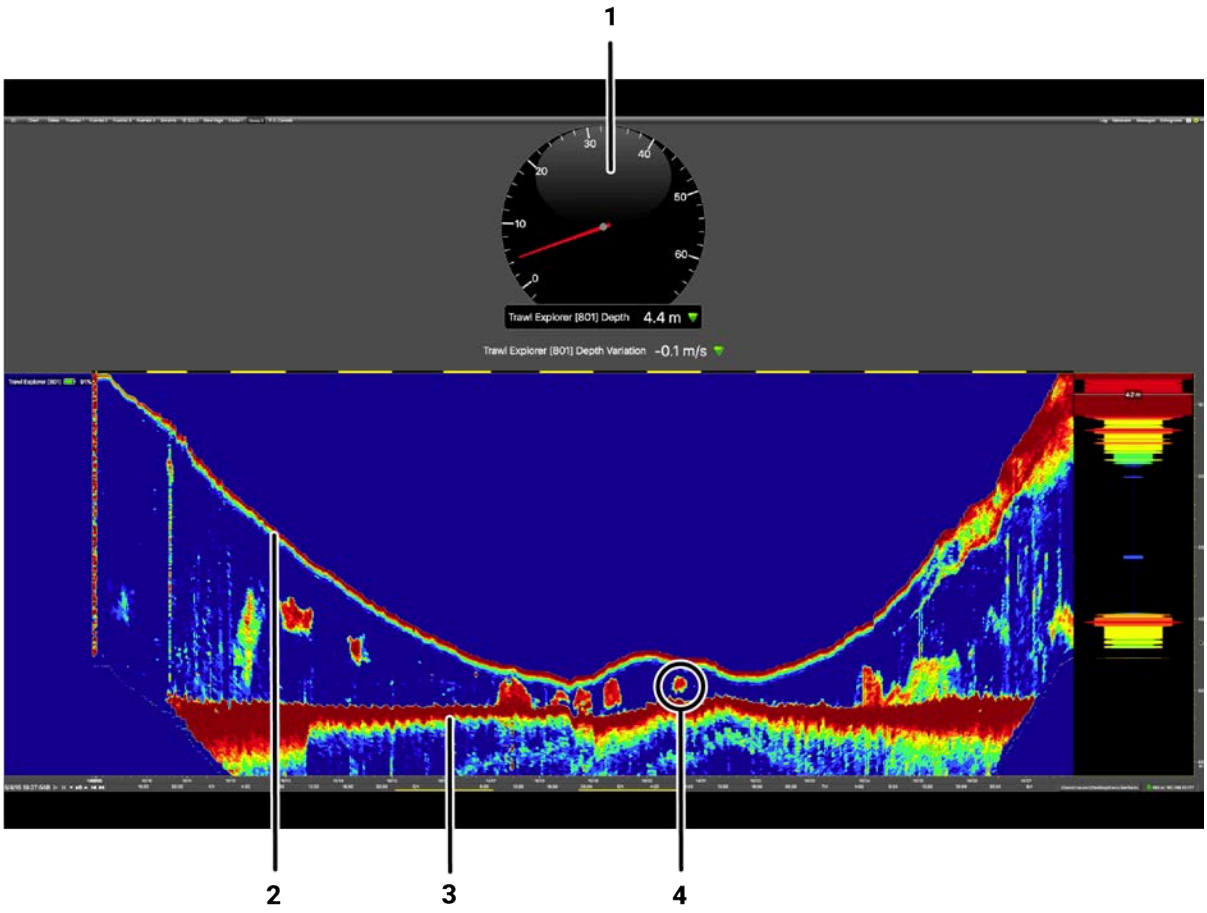
3. Leadline

4. Distance from the sensor to the seabed

5. Seabed

6. Seabed (echosounder)

7. Depth of seine sensors



1. Distance from the water surface to the head line

2. Lead line

3. Seabed

4. You can see missed schools of fish if seine is pulled in too fast

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.

Only qualified Marport dealers can do maintenance and repairs on internal components of the sensors.

Precautions

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

Description

Firmware

There are four different Seine sensors. Each sensor has a different firmware and different features.

- Seine sensor with depth: Depth FIRM010
- Seine sensor with depth and temperature: Depth with Temp FIRM011
- Seine sensor with depth, height and temperature: Height FIRM020

- Seine Explorer with temperature, depth, height and echogram:

Name of firmware	NBTE V2	NBTE V3
Number of firmware	FIRM126	FIRM128
Autorange feature	yes	yes
Target strength on echograms	n/a	yes

Technical Specifications

Seine sensors with depth / temperature and Seine sensors with height / depth / temperature

Uplink frequency	30 to 60 kHz
Range to vessel	up to 2500 m*
Sounder broadband frequency (height option)	Configurable between 120-210 kHz
Data update rate	Depth: 1-8 sec. - Temp: 3-16 sec. - Height: 1-14 sec.
Depth range	up to 1800 m
Depth resolution	0.1m with 0.1% accuracy
Temp measurement range	-5° C to +25° C
Temp accuracy	±0.1° C
Typical battery life	• SE50 (depth): up to 744 hours, depending on options † • SE100 (height): up to 72 hours, depending on options †
Charging time	Standard: 8-12 hours ‡
	Fast Charge: 4 hours
Battery type	Lithium-Ion
Heavy-duty model's weight in air (with housing)	10 kg

Heavy-duty model's weight In water (with housing)	5.8 kg
Light model's weight in air (with housing)	7.2 kg
Light model's weight In water (with housing)	3.3 kg
Warranty	2 years (Sensor & Battery)**

Seine Explorer

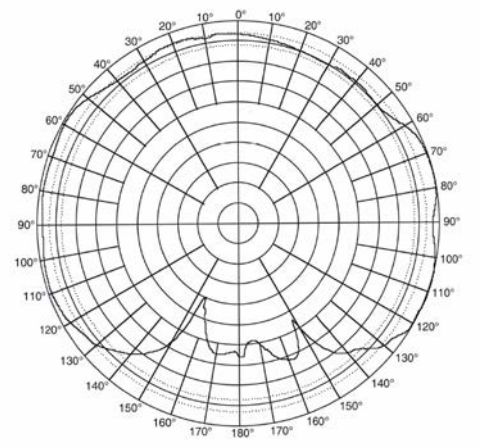
Important: Sensors with product number 46-134-1-01 have only a down looking transducer. Sensors with product number 46-137-1-01 have down and side looking transducers.

Uplink frequency	30 to 60 kHz
Range to vessel	up to 2500 m*
Down sounder broadband frequency	Configurable between 120-210 kHz
Up sounder broadband frequency	Configurable between 360-400 kHz
Sounder range	V2: 5 to 80 m - V3: 5 to 160 m
Data update rate	Depth: 1-8 sec. Temp/Battery/Height: every 6 sec.
Echogram update rate	Up to 3 images per second
Temp measurement range	-5° C to +25° C
Temp accuracy	±0.1° C
Depth resolution	0.1m with 0.1% accuracy
Typical battery life	12-24 hours †
Charging time	Standard: 8-12 hours ‡
	Fast Charge: 4 hours
Battery type	Lithium-Ion
Heavy-duty model's weight in air (with housing)	10 kg
Heavy-duty model's weight In water (with housing)	5.8 kg
Light model's weight in air (with housing)	7.2 kg
Light model's weight In water (with housing)	3.3 kg
Warranty	2 years (Sensor & Battery)**

*Reference only. Depends on functions enabled. / † Depends on sensor uplink power and options / ‡ Based on average charging time. / **Marport Standard Marine Limited Warranty

Seine Explorer Beamwidths

Beamwidth for uplink pings is omnidirectional.



Beamwidth for down pings:

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

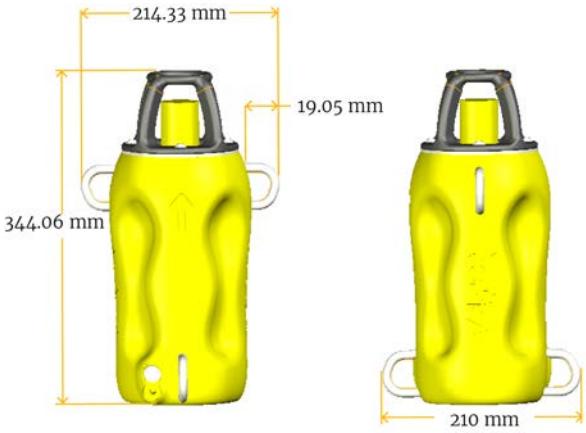
Beamwidth for side pings (if applicable):

@ 360 kHz	
3dB	-13°

Dimensions

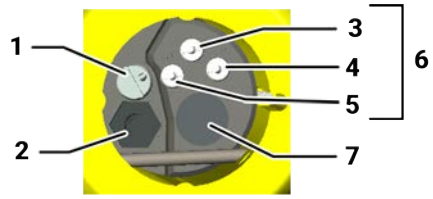
Heavy-duty

Light-weight



Main Parts

External View



1. Pressure sensor
2. Temperature sensor
3. Water switch
4. Positive charge
5. Negative charge
6. Shoulder bolts
7. Down transducer

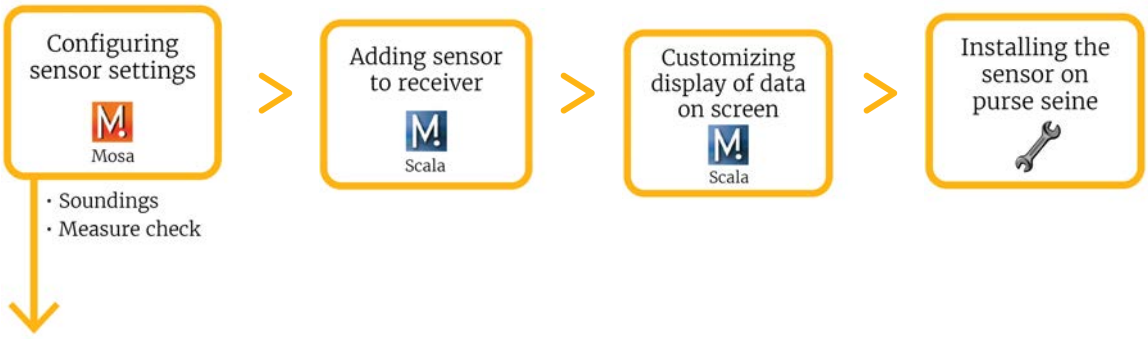
CAUTION:

- 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.

Installation Steps

Tip: Click an installation step to jump directly to the corresponding section.



Note: You can customize the display of data on Scala/Scala2 at any time.

Sensor Configuration

Learn how to configure the sensor settings.

Note: This guide refers to the following versions of **Mosa2:** 02.11.x. If you use another version, the visual interface and options may vary.

Connecting the Sensor to Mosa2

To configure the sensor, you need to connect it to Mosa2 using a wireless communication or using the Configuration Cable.

Using a Wireless Connection

About this task

Important: Mosa 2.11 running on macOS Monterey: A1 sensors cannot connect by short range wireless signal. You must use a Configuration Cable.

Procedure

1. Open Mosa2.

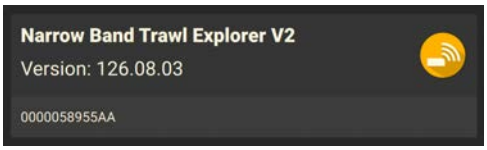
2. Connect the water-switch.

The light on the transducer flashes red.

3. Disconnect the water-switch.

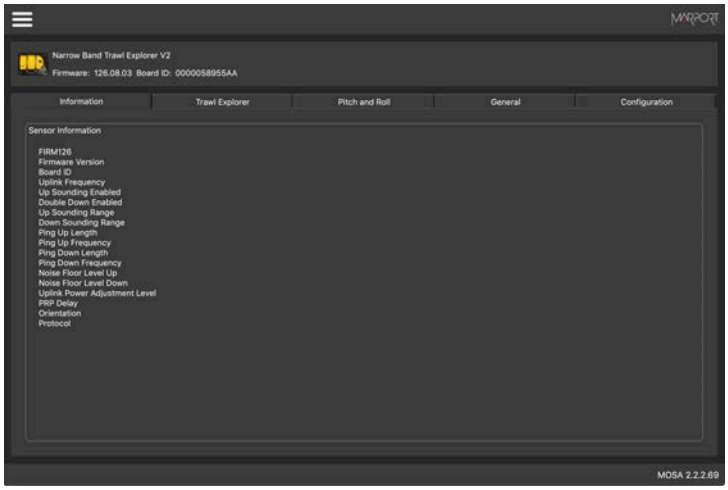
After a few seconds, the light flashes green.

4. Wait a few seconds for the sensor to be recognized. When it appears in the discovery page, click .



Results

The sensor configuration pages are displayed.



Using the Configuration Cable

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

About this task

Note: Compatible with Mosa2 02.05.x and above.

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

Procedure

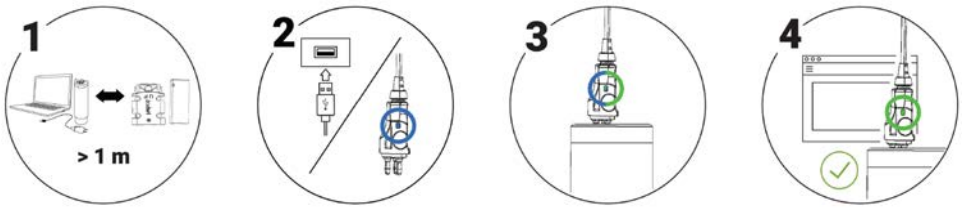
1. Move other electrical devices minimum 1 m away from the computer.
2. Connect the USB connector directly to the computer.

   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.

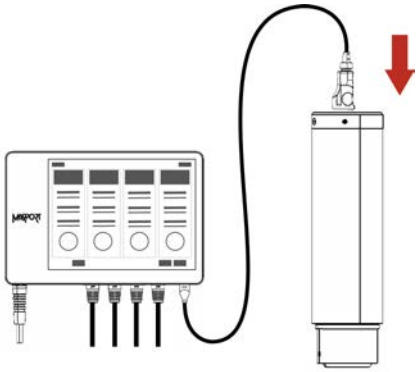
Using the Dock and a Configuration Cable

About this task

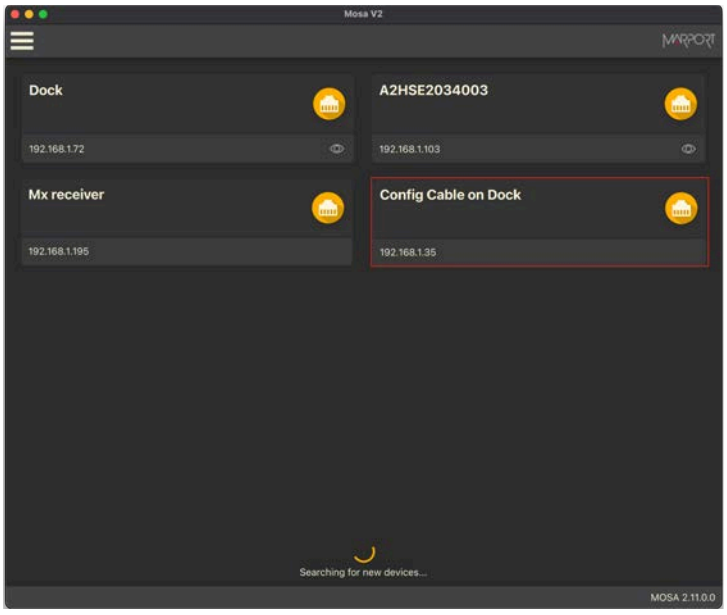
Note: Compatible with Mosa2 02.11.x and above.

Procedure

1. Connect the USB connector of the Configuration Cable to the Dock and the plug to the sensor's endcap.



2. Open Mosa2. The Configuration Cable is displayed on the discovery page.



Click to open the sensor configuration page.

3. To leave Mosa2 configuration page and come back to the discovery page, click ≡ > **Disconnect**.

Seine Explorer Specific Settings

You need to set these settings for a Seine Explorer sensor.

Sounding Modes

The sensor can send pings according to three different sounding modes.

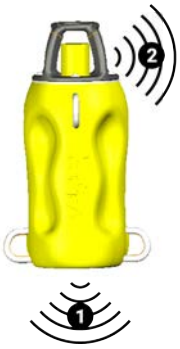
Down 1

Sensor sends pings towards down direction (**1**) only.

You can control the distance with the seabed.

Pings are sent quicker than with the other modes, so more data is received, which enables a better horizontal resolution. This mode is recommended for better quality echogram images.

Down 1 + Up



Sensor sends pings towards down (**1**) and side (**2**) directions.

With the down sounding, you can control the distance with the seabed. If applicable, with the side-looking (**2**) sounding (called up sounding in Mosa2), you can see schools of fish inside the net when the purse seine is deployed and going down.

Fewer pings are sent because they are distributed between the 2 directions. As a result, data arrives slower to the receiver and echograms are of lesser quality.

Down 1 + Down 2

Sensor sends 2 consecutive pings towards down direction (**1** and **2**).

This mode is useful if you need to send two different pings towards the down direction. For example, sending one short and one long ping, or sending one low frequency and one higher frequency ping.

Like down + up mode, fewer pings are sent because they are distributed between the two different down soundings. As a result, data arrives slower to the receiver and echograms are of lesser quality.

Configuring the Uplink, Up (Side) and Down Settings

You can configure different settings for uplink, down and up (side) soundings.

Before you begin

The sensor is connected to Mosa2.

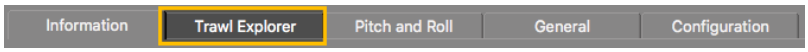
About this task

- If your Seine Explorer has only a down sounding (product number 46-134-1-01), ignore the settings for up sounding.
- If your Seine Explorer has down and side soundings, configure the side sounding via the up sounding settings.

Remember: Always click **Apply** after you change a setting and make sure there is a green check mark ✓.

Procedure

Click the tab **Trawl Explorer**.



Uplink

Procedure

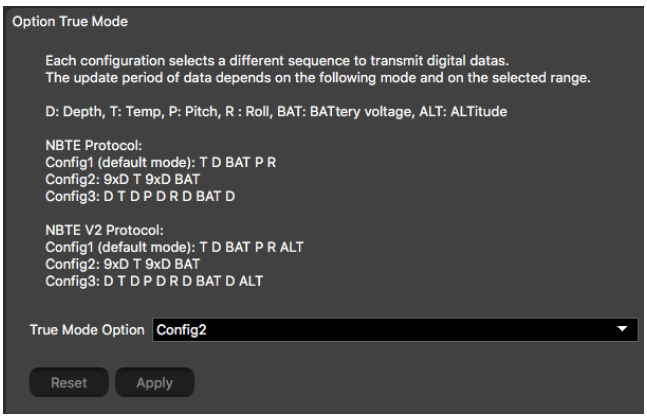
1. From **TE Uplink Frequency**, enter a frequency for the signal toward the vessel.

   Important: This parameter must be the same in the sensor settings in Scala/Scala2.

2. You can add a delay to the update of data to increase battery lifetime:

   a) Click **Menu** ☰ > **Expert Mode** and enter the password `copernic`.
   b) From **Delay Prp**, enter a delay between 1 and 5 seconds.

3. From **Option True Mode**, select **Config2**. This setting is specific to Seine Explorer sensors and needs to be applied. You will be able to see the descent rate of the lead line.



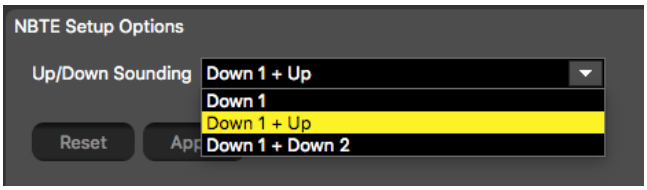
Note: If you select **Config1** or **Config3**, the echogram image will be irregular.

Note: There is no pitch and roll on Seine sensors.

Up/Down Soundings

Procedure

1. From **NBTE Setup Options**, select the sounding mode (see Sounding Modes on page 19 for more information).



Important: **Down 1 + Down 2** sounding mode: configure **Down 1** sounding in **Down** settings and **Down 2** sounding in **Up** settings (**Up Sounding Range**, **Ping Up Length**, **Ping Up Frequency**, **Up channel minimum TS**, **Up TVG Mode**, **TVG Up**).

Note: The **Up** settings correspond to the side sounding.

2. From **Down Sounding Range** and, if applicable, **Up Sounding Range**, select the range according to how many meters you want to see under the sensor. We recommend an up (side) sounding range of 80 m.

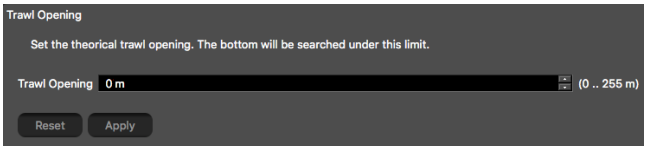
Note: The range influences the display of echogram images. The smaller the range, the shorter the listening time, which gives better quality images. But the bigger the range is, the lesser the image quality is, because data arrives slower. If you are using **Down 1 +**

Up or **Down 1 + Down 2** sounding mode, the image quality is even lower, as explained in Sounding Modes on page 19.

Note: The range of the down sounding can automatically change to 20 meters if the distance to the bottom becomes lower than 20 meters and if you entered a trawl opening lower than 20 m. See next step to activate or not this feature.

Important: This parameter must be the same in the sensor settings in Scala/Scala2.

3. From **Trawl Opening**, enter 0. The opening needs to be lower than 20 m to have the autorange feature. Otherwise this setting is not useful for a Seine Explorer.



Important: If you use **Down 1 + Down 2** sounding mode, enter 20 m or more to deactivate the autorange feature because it creates wrong data on the echogram.

4. From **Ping Down Length** and, if applicable, **Ping Up Length**, enter a pulse length. Choose a pulse length according to the distance at which you need to detect fish.Choose a pulse length according to the distance at which you need to detect fish or the bottom. (the longer the pulse, the further you can see, but with a lower resolution):

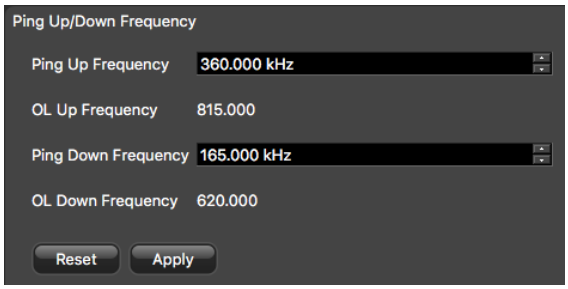
- Detection between 20 cm and 2 m: enter 0.1 ms
- Detection between 50 cm and 160 m (V2: up to 80 m): enter 0.3 ms (Recommended).

Note: The maximum detection depth depends on ping frequency and type of bottom. The lower the ping frequency is, the longer the detection depth is.

5. To change up (side) and down frequencies:

a) From **Ping Up Frequency**, enter a frequency between 360-400 kHz (recommended is 360 kHz).

b) From **Ping Down Frequency**, enter a frequency between 120-210 kHz (recommended is 165 kHz).



Important: NBTE V3 Do not change ping frequency on a V3 sensor or it will have to be returned to a Marport sales' office for target strength calibration.

Target Strength

Procedure

1. NBTE V3 For V3 version of sensors, **Down channel minimum TS** helps you detecting targets on the echogram. You can put -79 dB if you want to detect small targets. Otherwise, leave the default settings at -73 dB.

Important: This parameter must be the same in the sensor settings in Scala/Scala2.

2. From **Down TVG Mode**, select the appropriate TVG (Time Variable Gain) mode. See About Time Variable Gain on page 23 for more information.

NBTE V3

Select 20 log to see the bottom in the same color, whatever its distance from the sensor.

NBTE V2

- From **TVG Coefficient**, enter 0.500 to see the bottom in the same color, whatever its distance from the sensor.
- From **Attenuator Coefficient**, enter 25.
- Leave **VCO Coefficient** default settings at 3.

About Time Variable Gain

TVG (Time Variable Gain) is a method that compensate 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.

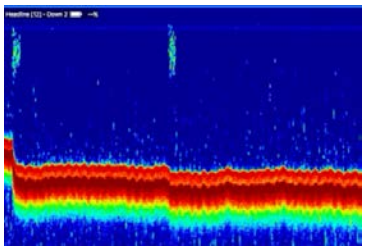
When the sounder sends pings, the deeper the target is, the more attenuated signals will be received and sent back. As a result, if the signal is too much attenuated, echoes (target strength) received from a target might not be as strong as they should be. TVG is here to compensate this effect. It uses 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.

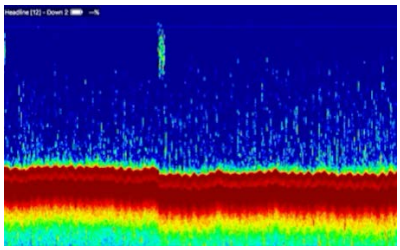
You can choose between three different TVG modes:

- 20 log: use to focus on the bottom, footrope or a school of fish (recommended for Seine Explorer).
- 40 log: use to focus on individual targets.
- 30 log: compromise between the two others.

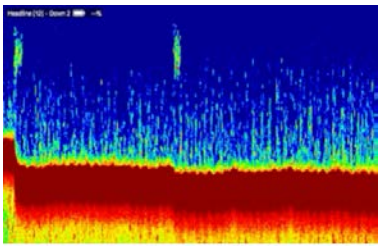
20 log



30 log



40 log



Configuring Seine Sensor Telegrams

If you have a Seine sensor with depth and other options, you need to configure the telegrams it transmits. This does not apply to Seine Explorer.

About this task

Telegrams are used to define the acoustic communication between the sensor and the receiver. Data (e.g. temperature, depth) are recognized by the receiver according to the type of telegram defined (e.g. TL, CL). The telegram defines intervals between pulses emitted by the sensor, and one interval represents one value. For example, if the interval between 2 pulses of a TL temperature telegram is 12 s, the temperature is 6.5 °C.

Important: Make sure there is a minimum distance of 100 Hz between PRP telegrams and of 400 Hz with the uplink frequency of NBTE sensors. See Frequency Plan on page 64 for a full list of boat/channel codes.

Remember: Always click **Apply** after you change a setting and make sure there is a green check mark ✓.

Depth

Procedure

1. Click the tab **Depth**.
2. From **Depth Boat Code/Channel Code**, choose a frequency.
3. From **Depth Telegram**, choose between:

Telegram	Max. depth	Sends data between every...
D1	100 m	1 to 2 sec.
D2	150 m	3 to 8 sec.
D3	300 m	3 to 8 sec.
D4 (FIRM20)	500 m	4 to 10 sec.
D6	600 m	3 to 8 sec.
D12	1200 m	
D18	1800 m	
PID3F (FIRM20)	300 m	3 to 6 sec.
PID3N (FIRM20)		13 to 16 sec.
PID3S (FIRM20)		33 to 36 sec.

Note: Use PID3 telegrams to send data to a Simrad PI system.

4. You can deactivate depth data to save battery life:
   a) From Mosa2, click **Menu** ☰ > **Expert** and enter the password `copernic`.
   b) From **Depth Activation**, select **No**.

Height

Only for Seine sensor with **height option (FIRM020)**.

Procedure

1. Click the tab **Height**.
2. From **Height Boat Code/Channel Code**, choose a frequency.
3. From **Height Telegram**, choose between:

Telegram	Max. height	Sends data between every...
H1	100 m	1 to 2 sec.
H2	60 m	5 to 8 sec.
H5	15 m	3 to 6 sec.
H8	150 m	11 to 14 sec.
PIH1F	100 m	4 to 6 sec.
PIH1N		13 to 15 sec.
PIH1S		33 to 35 sec.

Note: Use PIH1 telegrams to send data to a Simrad PI system.

Note: Height data are more accurate within a range of 0 to 50 m.

4. You can deactivate height data to save battery life:
   a) From Mosa2, click **Menu** ☰ > **Expert** and enter the password `copernic`.
   b) From **Height Activation** select **No**.

Temperature

Procedure

1. Click the tab **Temperature**.
2. From **Temperature Boat Code/Channel Code**, choose a frequency.
3. From **Temperature Telegram**, choose between:
   - TL: sends data between every 11 to 16 sec.
   - TN: sends data between every 3 to 11 sec.

Note: TN sends data more often, but it reduces the battery life.

4. You can deactivate temperature data to save battery life:
   a) From Mosa2, click **Menu** ☰ > **Expert** and enter the password `copernic`.
   b) From **Temperature Activation**, select **No**.

Down Sounding

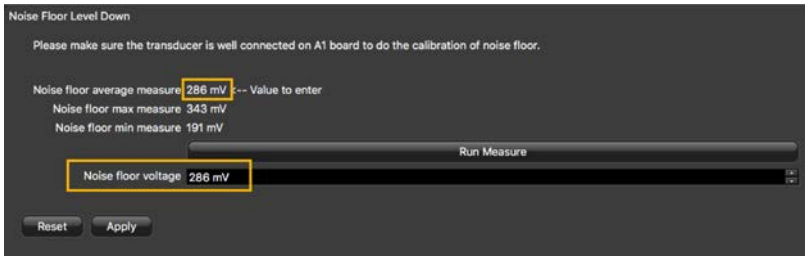
For **Seine sensors with height option (FIRM020)** you can change the default settings of the down sounding if needed, but it is recommended to keep default settings.

About this task

Note: Any testing of the sounding should be done in water, because signal attenuation is too high in the air.

Procedure

1. Click **Menu** ☰ > **Expert Mode** and enter the password `copernic`.
2. Click the tab **Bottom**.
3. From **Ping Down Frequency** enter a frequency between 120 and 210 kHz.
4. From **Ping Down Length** enter 0.4 ms for a detection between 50 cm and 160 m (V2: up to 80 m).
5. From **TVG Down**, select the appropriate TVG (Time Variable Gain) settings:
   - From **TVG Coefficient**, enter 0.500 to see the bottom in the same color, whatever its distance from the sensor.
   - From **Attenuator Coefficient**, enter 25.
   - Leave **VCO Coefficient** default settings at 3.
6. **Noise Floor Level Down** setting allows you to measure the ambient level of noise that can disrupt the signal. Once it has been measured, the sensor can ignore it.
   a) Click **Run Measure**. The noise floor average, max and min measures are displayed.
   b) In **Noise floor voltage**, enter the average measure.



Configuring the Uplink Power

You can increase the uplink power of the sensor to increase the power of the signal transmitted. It is useful if you have interferences or if the sensor is far from the vessel.

Before you begin

The sensor is connected to Mosa2.

Procedure

1. From Mosa2, click the tab **General**.

2. From **Uplink Power Adjustment Level**, choose the uplink power (values in percentage are for Mosa version 01.02.00 and later):

Sensor	Recommended Uplink Powers	Conditions	Estimated Battery Life
Seine Explorer	600 / 19%	Works for most conditions.	20-24 hours
	1000 / 32%	• When seine is big (diameter is more than 600 m). • High level of interference • Issues receiving data • Low SNR	11-15 hours
	1800 / 58%	• 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	5-7 hours
Seine sensor with depth	1800 / 43%	Works for most conditions.	approx. 744 hours (31 days)
	4095 / 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	The more you increase the uplink power, the shorter the battery life becomes.

Sensor	Recommended Uplink Powers	Conditions	Estimated Battery Life
Seine sensor with depth and temperature	1800 / 43%	Works for most conditions.	approx. 650 hours (27 days)
	4095 / 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	The more you increase the uplink power, the shorter the battery life becomes.
Seine sensor with depth, height and temperature	1800 / 43%	Works for most conditions.	approx. 650 hours (27 days)
	4095 / 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	The more you increase the uplink power, the shorter the battery life becomes.

Note: The average battery life also depends on the uplink frequency, sounding range and options activated.

Testing Measures

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

Before you begin

The sensor is connected to Mosa2.

Procedure

1. From Mosa2, click **Menu** ☰ > **Expert** and enter the password `copernic`.
2. Click the tab **General**.

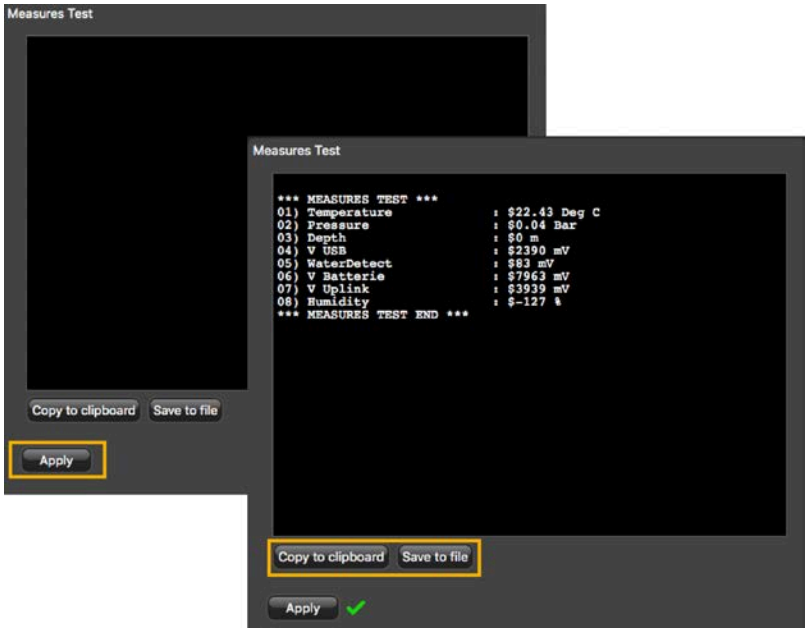
3. From **Measures Test**, click **Apply**.

   The measures taken by the sensor are displayed.
4. Check the following measures:
   - The temperature is consistent with the sensor environment.
   - The depth is between 0 and 2m.
   - The battery is between 6.9V and 8.1V.

Troubleshooting: If depth is incorrect, you can put an offset in **Depth** > **Depth Offset**.

The other measures are only useful for the support service.

5. To save the test results on your computer:



- Click **Save to file** to download the file.
- Or, click **Copy to clipboard** then press **Cmd + V** on a word processor like Pages to paste the contents.

Exporting Sensor Configuration Settings for Record Keeping

You can export in a *.txt file all the settings configured for the sensor (such as ping length, frequency, range, TVG...).

Before you begin

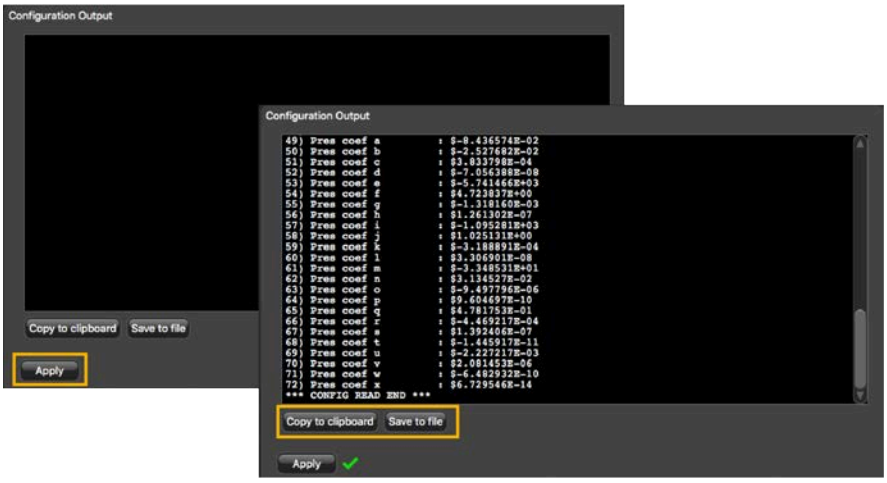
- You have finished configuring the sensor.
- The sensor is connected to Mosa2.

Procedure

1. Click the tab **Configuration**.

2. Click **Configuration Output**.
3. Click **Apply** under the black area.

   The settings are displayed.
4. To save the settings:



- Click **Save to file** to download the file on the computer.
- Or, click **Copy to clipboard**, then press **Cmd + V** on a word processor like Pages to paste the contents.

Exporting Sensor Configuration Settings for the Receiver

You can export on an XML file the sensor settings that you configured on Mosa2. You can afterward use this file when adding the sensor to a receiver.

Before you begin

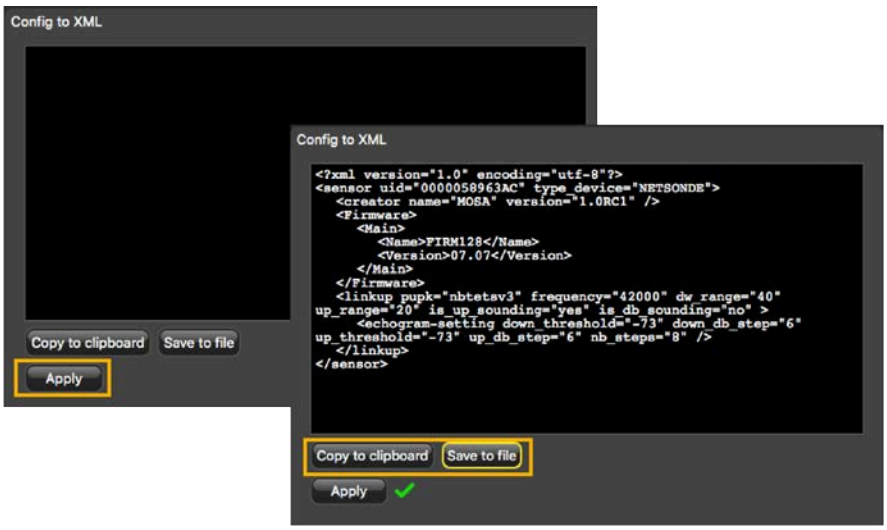
- You have finished configuring the sensor.
- The sensor is connected to Mosa2.

Procedure

1. Click the tab **Configuration**.

2. Click **Config to XML**.
3. Click **Apply**.

   The settings are displayed.
4. To save the settings:



- Click **Save to file** to download the XML file on the computer.
- Or, click **Copy to clipboard**, then press **Cmd + V** on a word processor like Pages to paste the contents.

5. Change the name of the XML file saved on your computer.

Note: When you export the sensor settings, the XML file always has the same name. Changing its name will prevent you from overwriting it the next time you download sensor settings.

What to do next

See Adding the Sensor with a Configuration File on page 34 to know how to add the sensor to a receiver with this file.

System Configuration and Display

Learn how to configure the receiver to be able to receive and display Seine sensor data.

Note: This guide refers to the following versions: Scala 01.06.06-01.06.34, Scala2 02.10.x. If you use another version, the visual interface and options may vary.

Adding the Sensor to the Receiver

You need to add Seine sensors to the receiver in order to display sensor data on Scala/Scala2.
Seine sensors compatible with the following M3/M4/M5/M6 receivers and Scala versions:

Firmware		Mx version	Scala/Scala2 version
Seine sensor with depth (FIRM010)		all	all
Seine sensor with depth and temperature (FIRM011)		all	all
Seine sensor with depth, height and temperature (FIRM020)		04.02.02 and later	01.04.05 and later
Seine Explorer	NBTE V2 (FIRM126)	03.01.23 and later	all
	NBTE V3 (FIRM128)	04.02.28 and later	01.02.05 or later

Defining the Trawl Gear Type

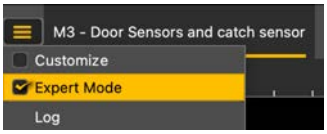
You need to choose a purse seine as trawl gear to be able to add seine sensors.

About this task

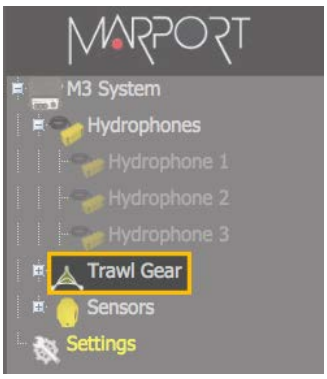
Important: If you change the trawl gear type of an existing trawl, you will loose all settings you made for the sensors added to this trawl. You will have to add them back and create new pages.

Procedure

1. Click **Menu** ☰ > **Expert Mode** , and enter the password `copernic`.



2. Scala Click menu again, then **Receivers**.
3. Scala2 Right-click the IP address of the receiver at the bottom of the page, then click **Configure Receiver**.
4. From the left side of the screen where the system is displayed, click **Trawl Gear**.



5. From the **Trawl Gear List**, select **Port Seine Gear** if you shoot your purse seine on the port side of the vessel or **Starboard Seine Gear** if you shoot it on the starboard side.

What to do next

You can add seine sensors to the system.

Adding the Sensor with a Configuration File

You can add the sensor to the receiver with a configuration file that contains the sensor settings you configured on Mosa2.

Before you begin

- You have exported an XML file containing the sensor settings (See Exporting Sensor Configuration Settings for the Receiver on page 31).
- The Trawl Gear is a **Port** or **Starboard Seine Gear**.

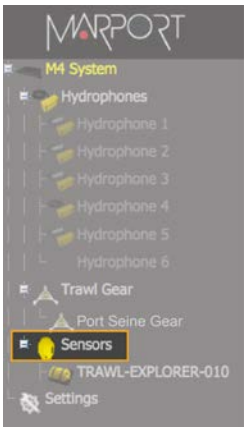
Important: You need to have **Firefox version 22 to 51**.

Procedure

1. Enter your receiver IP address in Firefox web browser to access the system web page. The system web page gives access to the configuration of the receiver.

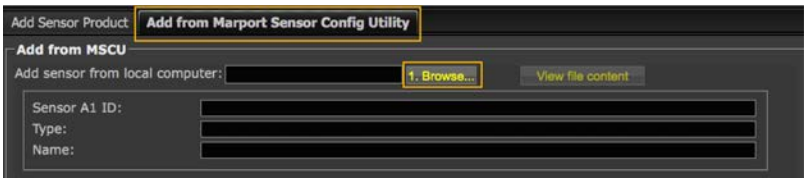
   Note: Default IP addresses are: 192.168.10.177 for M3 and M6 receivers, 192.168.1.170 for M4 receiver. Add the address as a bookmark in Firefox to easily access it.

2. From the left side of the page, click **Sensors**.

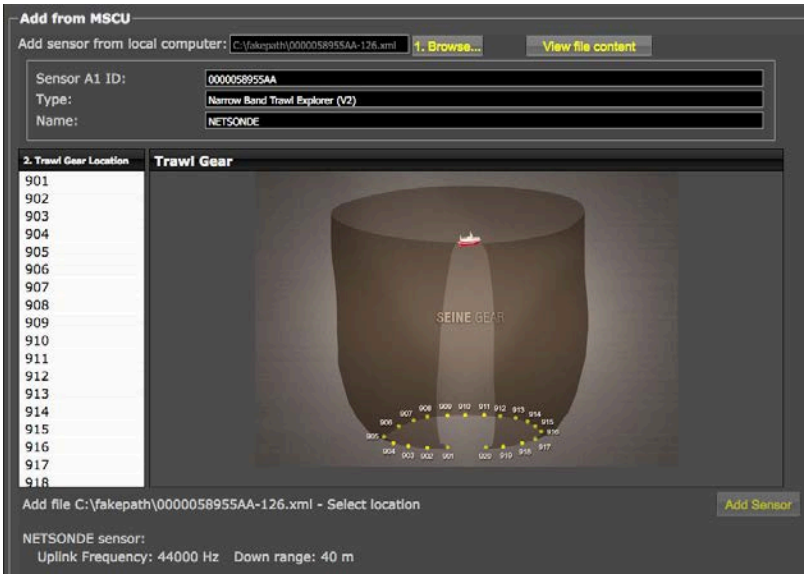


3. Click the tab **Add from Marport Sensor Config Utility**.

4. Click **Browse** and select the XML file.



Information about the sensor is displayed.



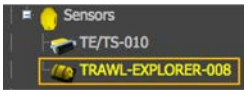
5. Select a node from the list on the left. Nodes in green are already used.

Note: We recommend to choose nodes:

- Middle of the lead line (recommended for Seine Explorer): around 910 for port seine purse / 811 for starboard
- First quarter of lead line: around 905 for port seine purse / 805 for starboard
- Three-quarters of lead line: around 915 for port seine purse / 816 for starboard

6. Click **Add Sensor**.

The sensor is added to the system, with all its settings.



Results

You can see incoming data in the control panels, in Scala **Sensors Data**/ Scala2 **Mx**.

What to do next

- If you want to apply filters on data received by the sensor, see Configuring the Sensor Settings on page 37.
- You can now configure the display of incoming data in Scala/Scala2.

Adding the Sensor Manually

You can add the sensor to the receiver from Scala/Scala2, by entering the same settings as the ones in Mosa2.

Adding the Sensor to the Receiver

You can add the sensor to the receiver from Scala/Scala2, by entering the same settings as the ones in Mosa2.

Before you begin

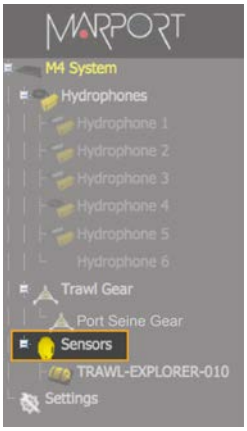
The Trawl Gear is a **Port** or **Starboard Seine Gear**.

About this task

In order to avoid differences of settings between the configuration on Mosa2 and Scala/Scala2, we recommend you to add the sensor to the receiver with an XML configuration file exported from Mosa2.

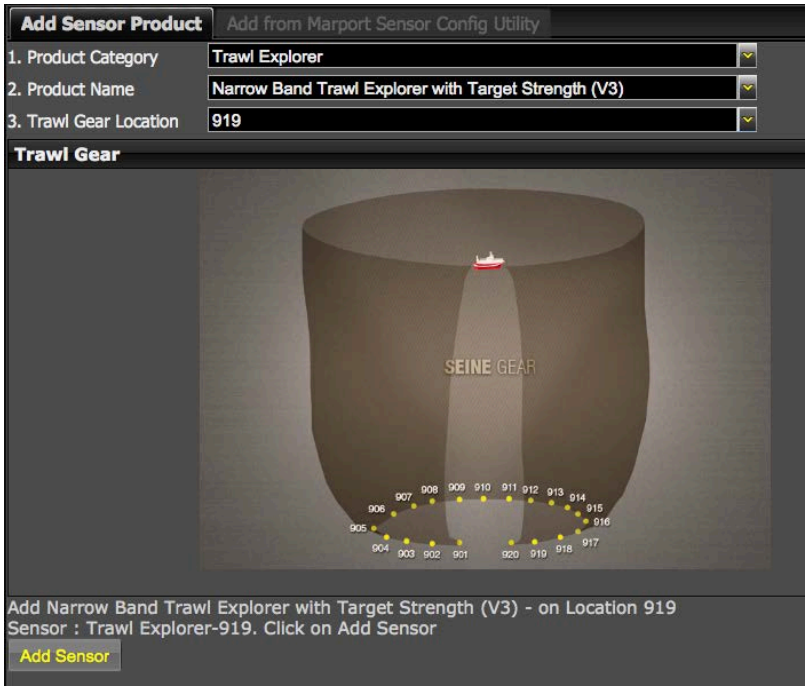
Procedure

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



5. From the page **Add Sensor Product**, select the **Product Category** and **Product Name** according to your type of sensor:

Sensor	Product Category	Product Name	Seine Gear Location
Seine sensor with depth (FIRM010)	Depth	Depth	• Middle of the lead line (recommended for Seine Explorer): around 910 for port seine purse / 811 for starboard • First quarter of lead line: around 905 for port seine purse / 805 for starboard • Three-quarters of lead line: around 915 / 816 for starboard
Seine sensor with depth (FIRM011)	Depth	Depth with temperature	
Seine sensor with depth, height and temperature (FIRM020)	Height	Height with Depth and Temperature	
Seine Explorer	Trawl Explorer	Narrow Band Trawl Explorer with Target Strength (V2)/(V3)	

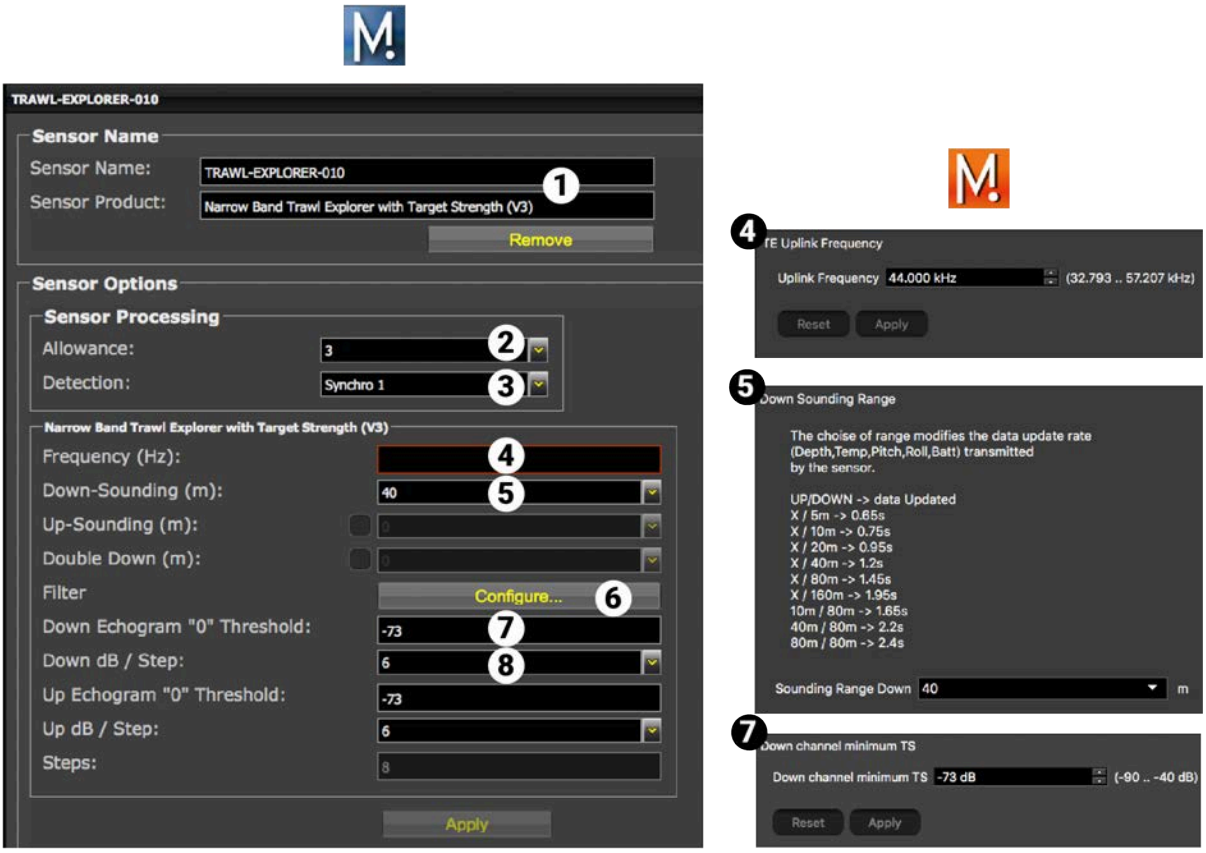


6. Click **Add Sensor**.

Configuring the Sensor Settings

Seine Explorer

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



1	Sensor name displayed in Scala/Scala2 and its features.
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 **0-2** only if no interferences on the vessel (not recommended). · **3** is default setting. · Choose between **4-6** 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 range of **Down** sounding from the drop-down menu. Select **Up-Sounding** if the sounding mode of the sensor is **Down 1 + Up**. Then, select the range of **Up** (side-looking) sounding. Select **Double Down** if the sounding mode is **Down 1 + Down 2**. Then, select the range of **Down 2** sounding.
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 Scala/Scala2 user guide for more information about the filters.

7	Helps you detecting targets on the echogram. Corresponds to **Channel minimum TS** in Mosa2.
8	Do not change this setting.

Click **Apply** when you have finished.

Seine sensors with depth and other options

Note: The picture below shows a Seine sensor with height, depth and temperature options.

1	Sensor name displayed in Scala/Scala2 and its features.
2	This setting helps detecting the signal of the sensor among other sensor or echosounder signals. Change only if you have issues receiving data. • **Detection and 2D**: default value. This setting helps distinguishing the sensor signals when there are a lot of interferences (e.g. echosounders). It selects the correct signals according to very selective criteria. • **Detection**: If you do not receive data, it may be because the **Detection and 2D** setting is too selective with the signal. **Detection** is less selective and allows more signals to be received. • **Detection for Seiner**: Use if you do not receive data or data is wrong with two above settings and if depth is less than 100 m.
3	• **Low**: if the signal of the sensor is high = the trawl is close to the vessel (SNR min. 18 dB). • **Medium**: Default setting. Compromise between the two other settings (SNR min. 12 dB). • **High**: if the signal of the sensor is low = the trawl is far from the vessel (SNR min. 6 dB).
4	Enter the same frequencies as those entered in Mosa2 for each option in **Boat Code/Channel Codes**.
5	Enter the same telegrams as those entered in Mosa2 for each option.
6	Click **Configure** to change filters applied on incoming data.

Click **Apply** when you have finished.

Results

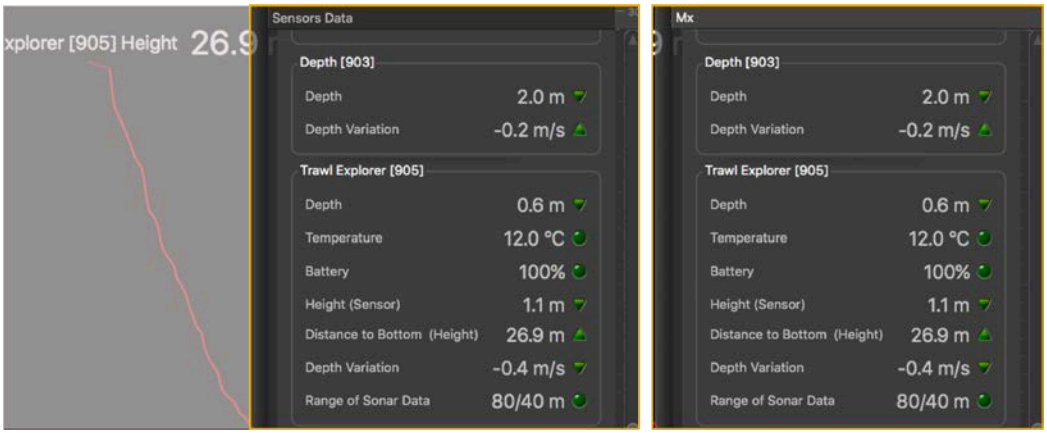
The sensor is added to the system. You should see incoming data from the control panels, in **Sensors Data**. You can now configure the display of incoming data in Scala/Scala2.

Configuring Data Display on Scala/Scala2

You can display measurements of Seine sensors (e.g. depth, height, echogram...) on pages in Scala/Scala2.

About this task

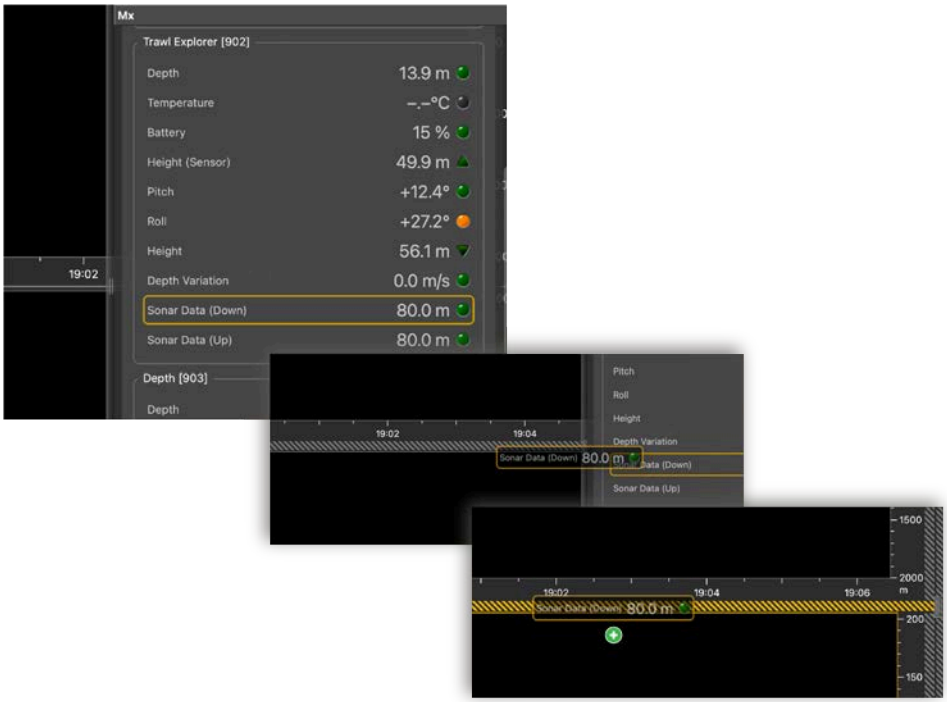
Measurements taken by Seine sensors are displayed in the control panels, under Scala **Sensors Data** / Scala2 **Mx**. Data title should be **Trawl Explorer** for a Seine Explorer and **Depth** or **Height** for the other Seine sensors. The title is followed by the node where the sensor was placed when added to the system. Data displayed (e.g. depth, temperature, echogram) depend on the firmware installed.



On Seine sensors, the combination of depth and time allows you to know the descent rate of the lead line.

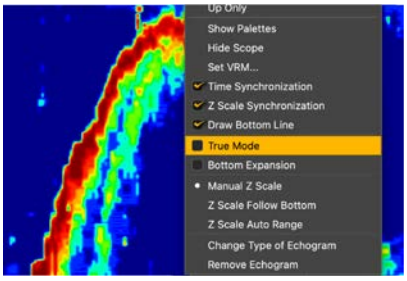
Procedure

1. From the top left corner of the screen, click **Menu** ☰ > **Customize** and enter the password `eureka`.
2. To display echogram images from a Seine Explorer: go to Scala **Sensors Data** / Scala2 **Mx** tab, then click + hold **Sonar Data** of the **Trawl Explorer** and drag it to the page display.

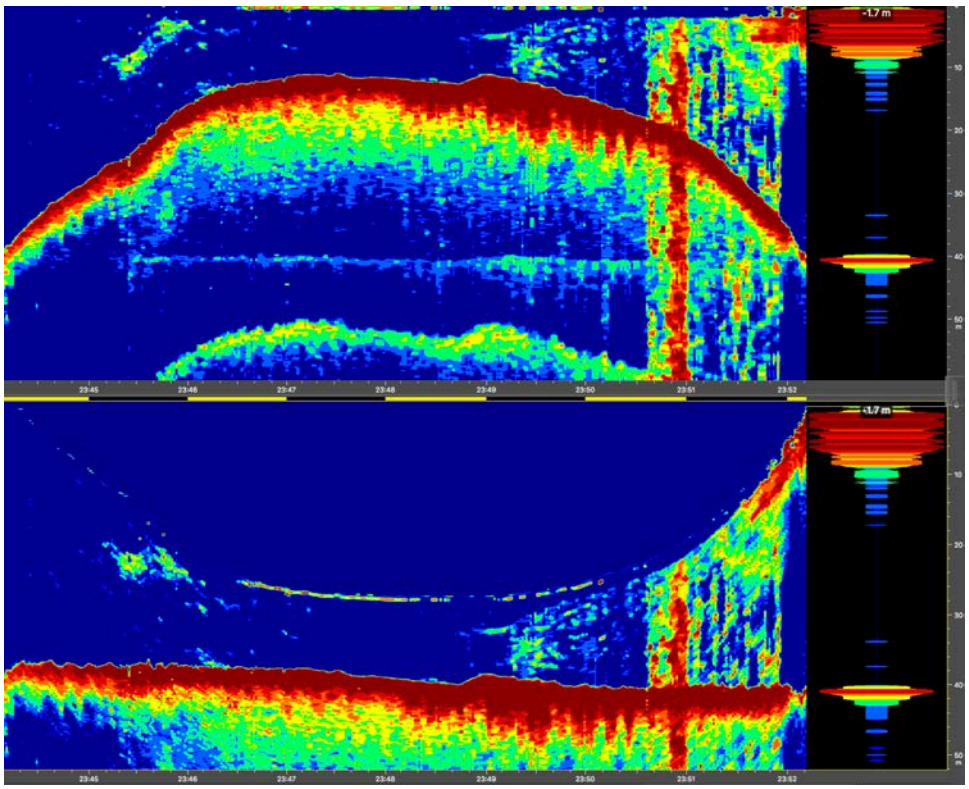


3. If your sensor has a side-looking sounding, right-click the echogram and click **Down only** to see only the area below the lead line.

4. To clearly see the descent of the lead line, right-click the echogram and select **True Mode**.

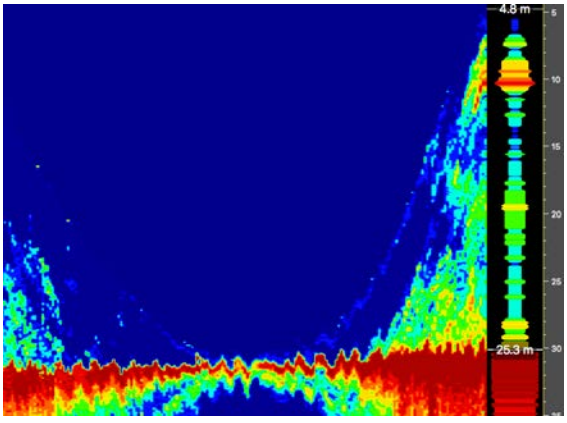
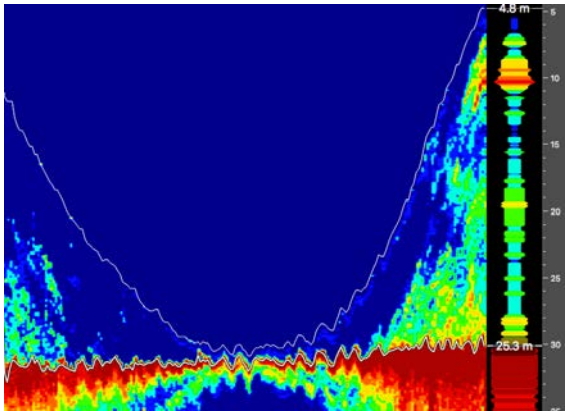


Note: When **True Mode** option is activated, the echogram is displayed beginning from the water surface (1). When the option is deactivated, the echogram is displayed beginning from the sensor position (2).



5. To clearly identify the lead line and sea bottom, right-click the echogram and select **Draw Bottom Line**.

   White lines follow the lead line and sea bottom.

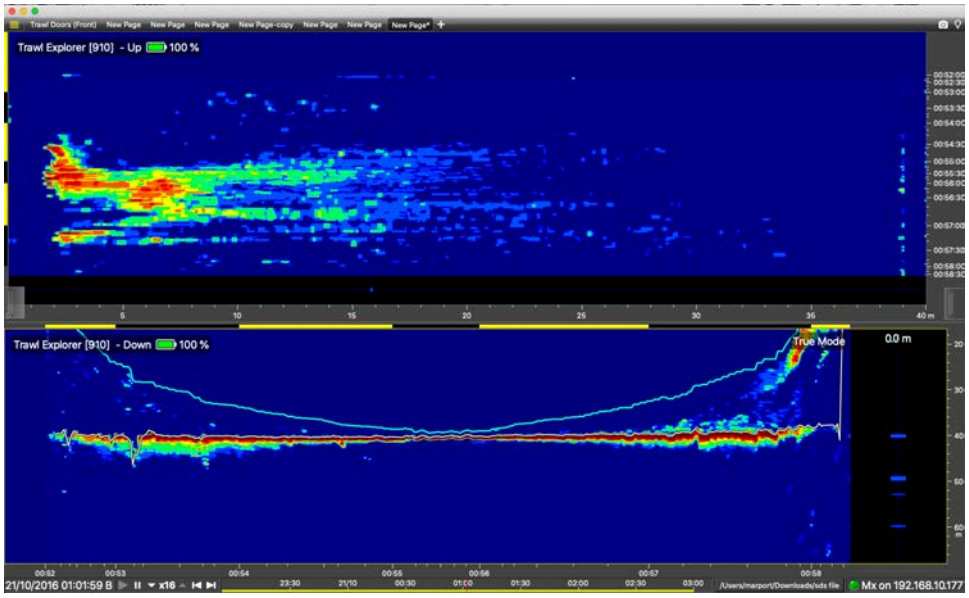
Without bottom line	With bottom line
	

6. To see the echogram of the side-looking sounding (if applicable):

   a) Again, add the same echogram to the page.
   b) Right-click the echogram and click **Up only**.
   c) Scala2 Then, click **Vertical Display**.

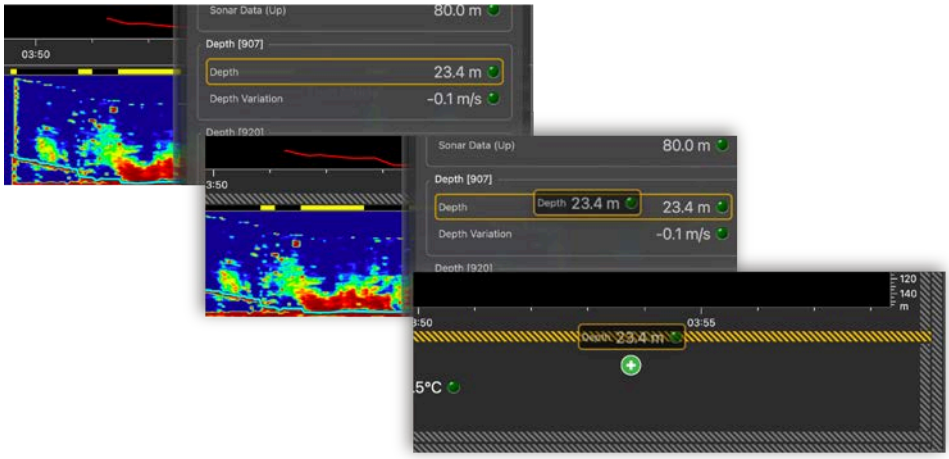
   The echogram displays the contents of the area being surrounded by the net, during its descent. This way, you can see if there are schools of fish.

Note: The echogram is displayed turned 90° to the left. The bottom of the echogram corresponds to the location of the sensor.



7. To display depth data from all your sensors in a same history plot:

   a) From Scala **Sensors Data** / Scala2 **Mx**, click+ hold **Depth** data from a depth sensor and drag it to the page.

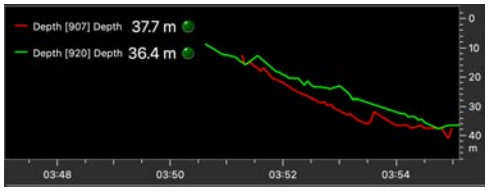


   b) Click **History Plot** in **Choose new Gauge Type**.

   Depth is displayed in a history plot.

   c) Again, click + hold **Depth** data from another seine sensor and drag it above the history plot you have created.

Depth data from both sensors are displayed together. If you have other depth data from seine sensors, repeat the steps.

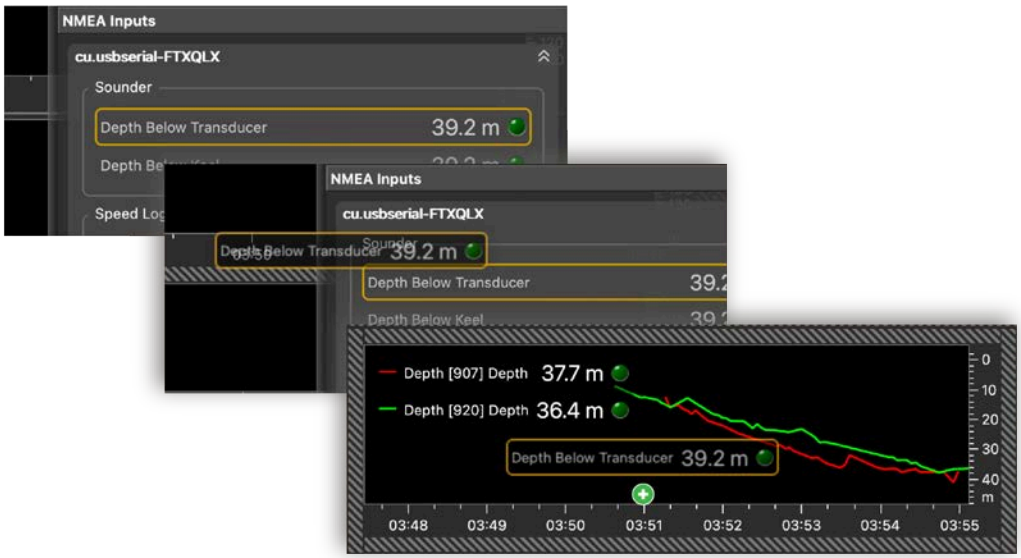


8. If you have an echosounder on the hull of the vessel and receive its data on Scala/Scala2, you can add its depth measurements to the depth plots:

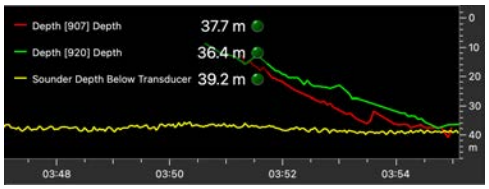
   a) From Scala **Sensors Data** > **NMEA** / Scala2 **NMEA Inputs**, click + hold **Depth Below Transducer** data and drag it above the depth plots.

Scala

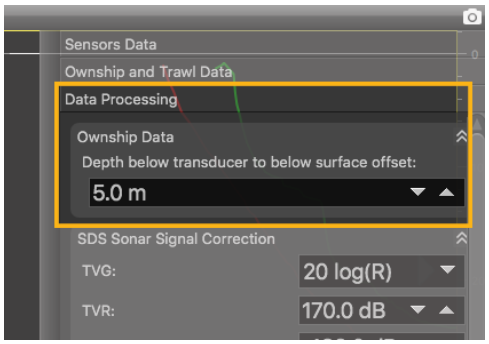
Scala2



The seabed is displayed (yellow). This way, you can see if the sensor is close to the seabed.



b) Scala If on the plot, the line of the depth sensor goes under the seabed line (depth below transducer), you need to put an offset to the echosounder's depth. Open the control panels and go to **Data Processing** > **Ownship Data**. Then, enter the difference of depth that you see on the plot in **Depth below transducer to below surface offset**. This time, drag **Depth Below Surface** data instead of **Depth Below Transducer**.



Note: The sensor and echosounder may not display the same depth because there are not installed on the same location on the hull and measure depth in two different ways (from the water pressure for the sensor, and from wave of sounds for the echosounder).

9. To display other data, such as height or temperature:

a) From Scala **Sensors Data** / Scala2 **Mx**, click+ hold data from a sensor and drag it to the page.

b) From **Choose new Gauge Type**, choose a type of display.

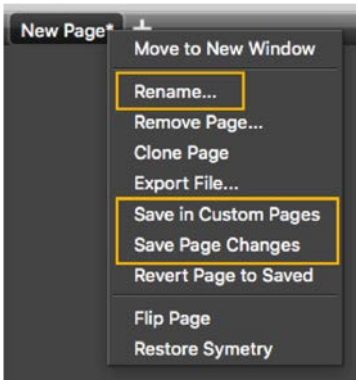
Note:

- Depth: distance from the head of the sensor to the water surface.
- Height (Sensor): distance from the sensor to the seabed, sent from the sensor.
- Distance to Bottom (Height): distance from the sensor to the seabed, calculated by Scala/Scala2.
- Depth Variation: useful to control the speed of the descent

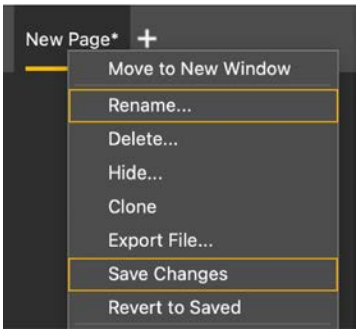
10. To save the changes you made:

1. To rename the page, right-click the name of the page and click **Rename**.
2. To save the page, right-click the name of the page and click **Save Changes**.
3. Scala To have a backup of the page, right-click the name of the page and click **Save page template as**.
   Your page is saved in Scala's page backups.

Scala



Scala2



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

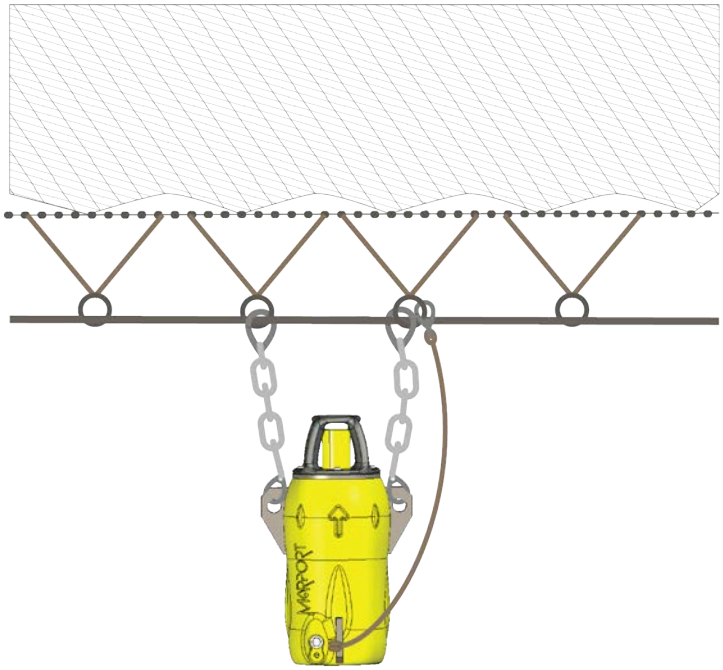
Installation

Learn how to install Seine sensors on the trawl gear.

Installing the Seine Sensor on a Purse Seine

Procedure

1. Attach two separate chains on the 2 front attachment lugs of the sensor using snap hooks.
2. Attach the chains to the lead line with one snap hook. The yellow transducer must points toward the surface when purse seining and the bottom of the sensor must hang freely to be always aligned with the seabed.
3. Attach a safety wire from one back attachment lug to a pursing ring (not on the lead line).



1. Outside of purse seine

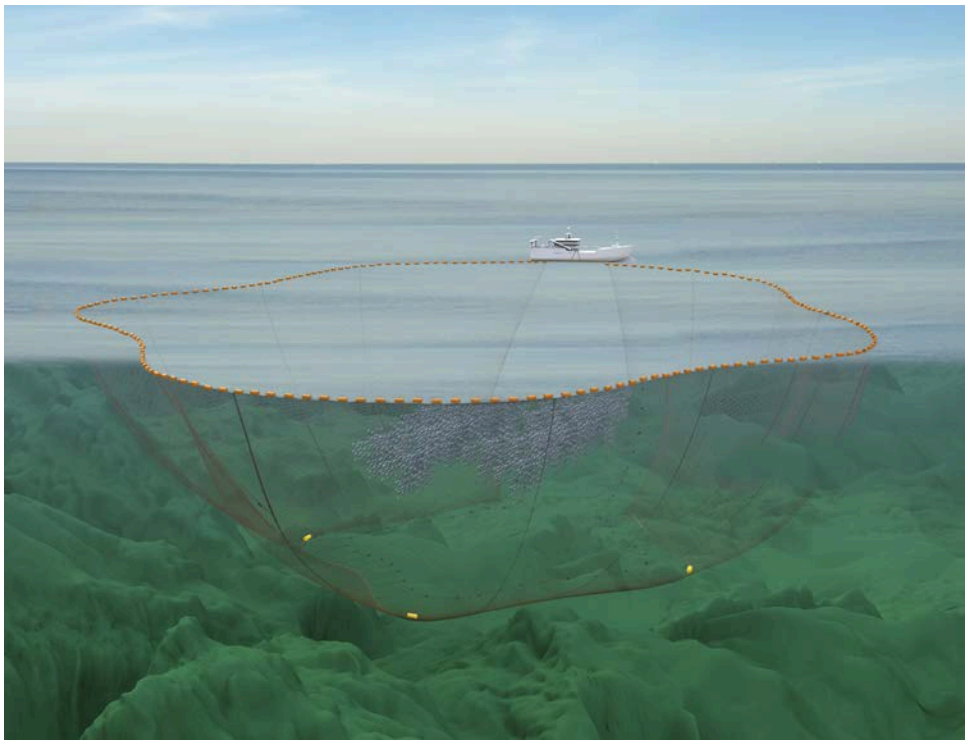
2. Inside of purse seine

3. Signal toward the vessel (uplink)

4. Side sounding

5. Down sounding

4. Ideally, you can place three sensors at different locations on the lead line of the purse seine: one on a quarter of the length, one in the middle and one on three-quarters of the length. If you have a Seine Explorer, we recommend to install it on the middle of the length. See picture below.



5. If the net stays on the deck for a long time after hauling, dry the end cap of the sensor to make sure it does not continue to operate.

Maintenance and Troubleshooting

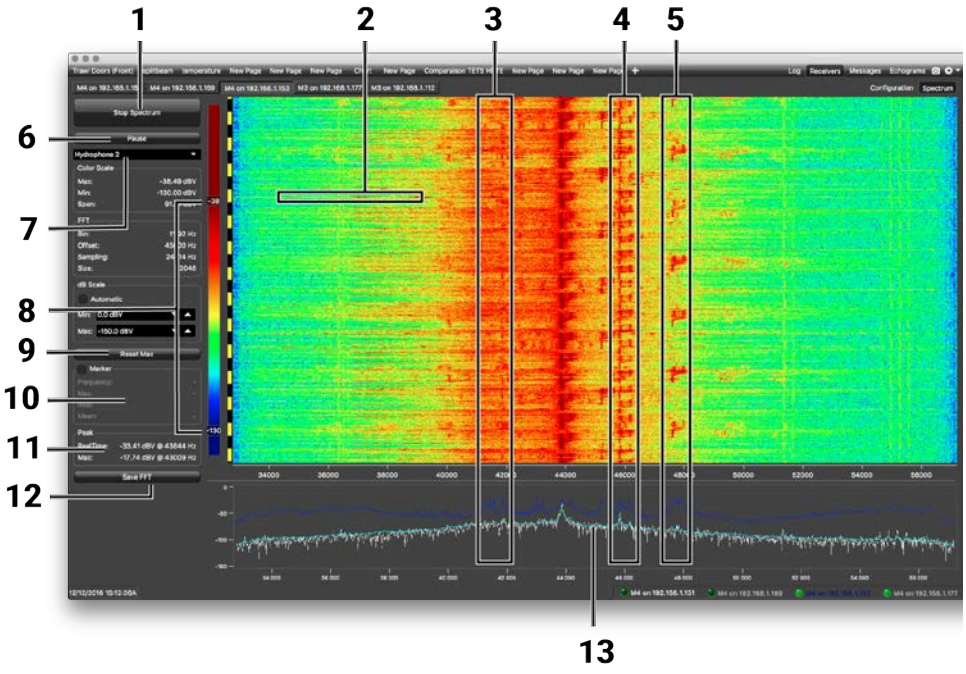
Read this section for troubleshooting and maintenance information.

Interference Check

You can check if there is noise interfering with the reception of signals.

Scala Spectrum Analyzer Display

The following picture explains the main parts of the spectrum analyzer page on Scala/Scala2.



1. Start/Stop spectrum analyzer
2. Noise interference
3. Pulses of the sensors (PRP)
4. Narrow band/HDTE signals
5. Door sounder signals
6. Pause spectrum analyzer
7. Select hydrophone
8. Drag to adjust color scale
9. Reset the Max line.
10. **Marker**: display frequency and levels of noise (dB) at the mouse pointer location on the graph.
11. **Peak**:
    - **RealTime**: latest highest level of noise recorded.
    - **Max**: highest level of noise recorded since the beginning of the spectrum.
12. Export recorded max, mean and real time noise levels in a txt file.
13.
    - Dark blue line: maximum signal level
    - Cyan line: average signal level
    - White line: last received signal level

Scala Checking Noise Interference

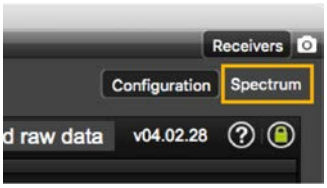
You can use the spectrum analyzer to check the noise level of the hydrophones and check for interference.

About this task

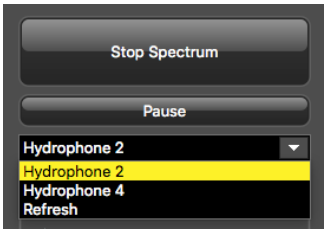
See Spectrum Analyzer Display on page 50 for details about the spectrum analyzer display.

Procedure

1. Click **Menu** ☰ > **Expert Mode** and enter the password `copernic`.
2. Again in the menu, click **Receivers**.
3. From the top right corner of the screen, click **Spectrum**.



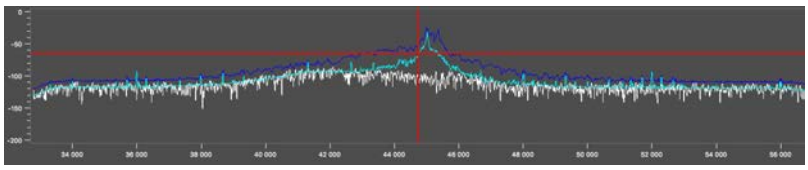
4. Select the hydrophone you want to test. Only the hydrophones that are switched on are displayed. Select refresh to update the list.



5. From the top left corner of the screen, click **Start Spectrum**.

   The graph at the bottom of the page shows three levels of noise in dBV:

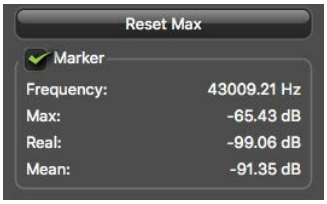
   1. **RealTime** (white): level of noise recorded in real time.
   2. **Mean** (cyan): mean recorded level of noise. It is useful to assess the noise floor.
   3. **Max** (dark blue): shows the latest highest level of noise recorded. It is useful to see on which frequencies are the sensors.



   The acceptable average level of noise depends on the conditions (distance from the sensor to the hydrophone, fishing method, type of hydrophone). You can have better performance with the following levels:

   - Active wideband hydrophone with high/low gain: below -100 dBV
   - Active narrowband: NC-1-04 below -80 dBV / NC-1-07 below -100 dBv
   - Passive hydrophone: below -110 dBV

6. To see the maximum, mean and real time measures of noise level at a specific frequency, select **Marker** on the left side of the screen and move the mouse over the graph.



   Frequency and levels of noise (dB) at the mouse pointer location are displayed under **Marker**.

7. Under **Peak**, you can check:
   - **RealTime**: the latest highest level of noise recorded.
   - **Max.**: the highest level of noise recorded since the beginning of the spectrum.
8. Check that there is more than 12dBV between the maximum noise level (dark blue line) and the average noise level (light blue line) on the peak of sensor frequencies.
9. If you changed the configuration of the hydrophone or sensors, click **Reset Max** to reset the dark blue line showing the maximum level of noise.
10. To save data recorded by the spectrum in a *.txt file, click **Save FFT**.

    The FFT file lists for the entire bandwidth used by the hydrophone (frequencies are in Hz) the maximum and mean levels of noise since the FFT export has started and the last real time level of noise before the export (dBV).

FFT level for Hydrophone 1 of Receiver 192.168.1.153			
Freq	Max	RealTime	Mean
32793	-129.07	-136.64	-138.50
32804	-129.31	-138.41	-139.65
32816	-128.72	-142.89	-139.02
32828	-128.09	-147.78	-139.86
32840	-127.95	-143.07	-140.06

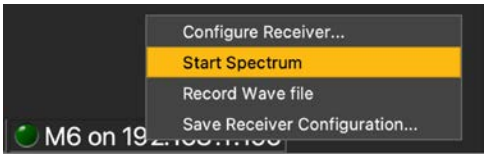
11. When you have enough data, click **Stop Spectrum**.

Scala2 Checking Noise Interference

Use the spectrum analyzer to check the noise level of the hydrophones and check for interference.

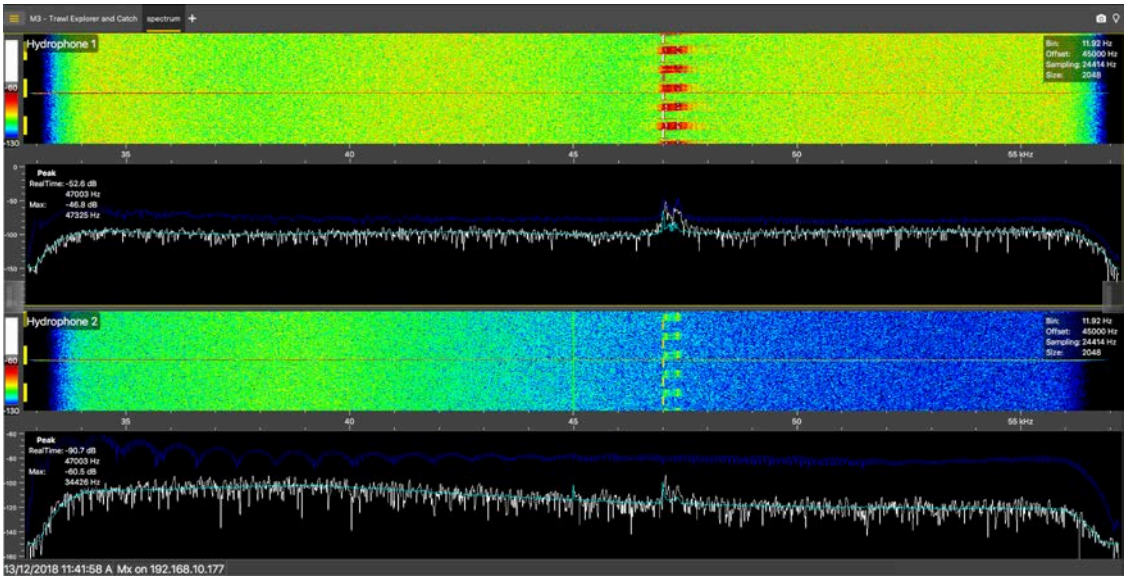
Procedure

1. Click Add + to create a new page on which you will add the spectrum analyzer(s).
2. Right-click the IP address of the receiver in the status bar and click **Start Spectrum**.



3. Open the control panels and go to the **Mx** panel.
4. Go to **Hydrophone** data, then drag and drop **Spectrum** data to a page. These data appear only when the spectrum has been started.

5. The spectrum analyzer is displayed. You can display up to 6 spectrum analyzers at the same time. Below is an example of a page with two spectrum analyzers.



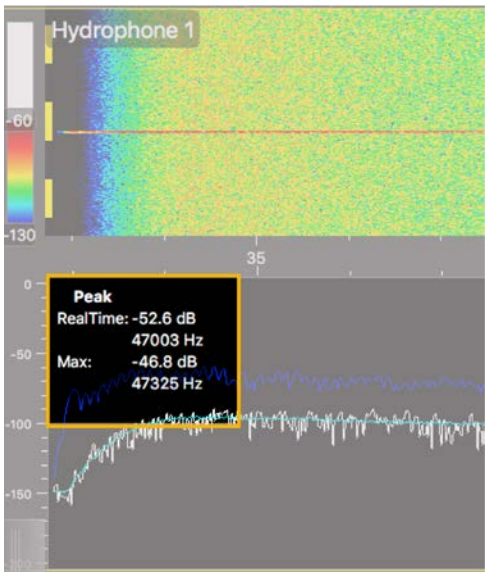
The FFT plot shows three levels of noise in dBV:

1. **RealTime** (white): level of noise recorded in real time.
2. **Mean** (cyan): mean recorded level of noise. It is useful to assess the noise floor.
3. **Max** (dark blue): shows the latest highest level of noise recorded. It is useful to see on which frequencies are the sensors.

The acceptable average level of noise depends on the conditions (distance from the sensor to the hydrophone, fishing method, type of hydrophone). You can have better performance with the following levels:

- Active wideband hydrophone with high/low gain: below -100 dBV
- Active narrowband: NC-1-04 below -80 dBV / NC-1-07 below -100 dBv
- Passive hydrophone: below -110 dBV

6. Scroll on the frequency or dBV scales to zoom in and out.
7. Under **Peak**, you can check:

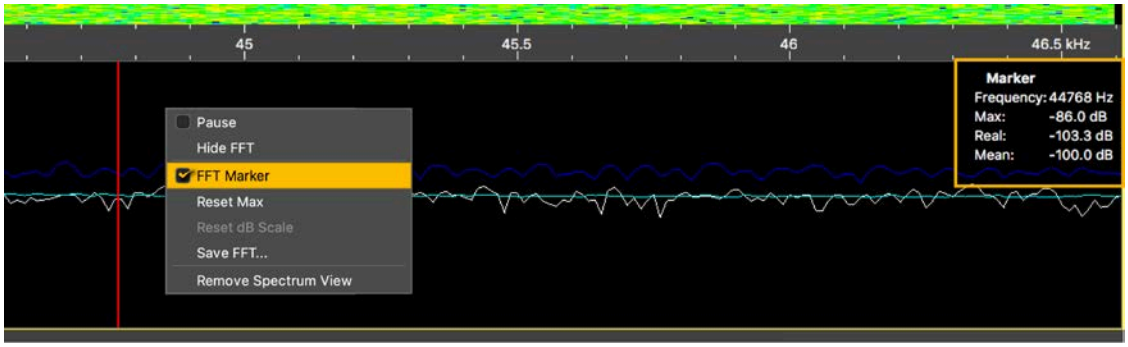


- **RealTime**: the latest highest level of noise (dBV) recorded and its frequency.
- **Max**: the highest level of noise recorded since the beginning of the spectrum and its frequency.

8. Check that there is more than 12 dBV between the maximum noise level (dark blue line) and the average noise level (cyan line) on the peak of sensor frequencies.
9. If you changed the configuration of the hydrophone or sensors, right-click the graph and click **Reset Max** to reset the dark blue line showing the maximum level of noise.
10. To check the maximum, mean and real time measures of noise level at specific frequencies:

    a) Right-click the FFT plot and click **FFT Marker**.
    b) Click and drag the marker at a specific point.

    Frequency and levels of noise at the marker position are displayed on the right side of the graph.



11. Right-click the spectrum and click **Pause** if needed.
12. To save data recorded by the spectrum in a *.txt file, right-click the FFT plot and click **Save FFT**.

    The FFT file lists for the entire bandwidth used by the hydrophone (frequencies are in Hz) the maximum and mean levels of noise since the FFT export has started and the last real time level of noise before the export (dBV).

FFT level for Hydrophone 1 of Receiver 192.168.1.153			
Freq	Max	RealTime	Mean
32793	-129.07	-136.64	-138.50
32804	-129.31	-138.41	-139.65
32816	-128.72	-142.89	-139.02
32828	-128.09	-147.78	-139.86
32840	-127.95	-143.07	-140.06

13. Right-click the spectrum analyzer and click **Hide FFT** to hide the FFT plot.
14. Right-click the IP address of the receiver in the status bar and click **Stop Spectrum**.

Charging the Sensor

Charge the sensor at any battery level with either Marport Dock charger, Basic Sensor Charger or Medusa II Multi-charger.

About this task

The sensor uses lithium-ion batteries. Charge them only with Marport's chargers.

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

Important: For Basic/Medusa chargers and Dock products with serial number before DOC2107XXX: 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 prevent corrosion of the charging pins.

   Note: Check that the charging pins are not damaged. If they are, contact you local Marport dealer for replacement. Below is an example of shoulder bolts damaged because of insufficient maintenance.

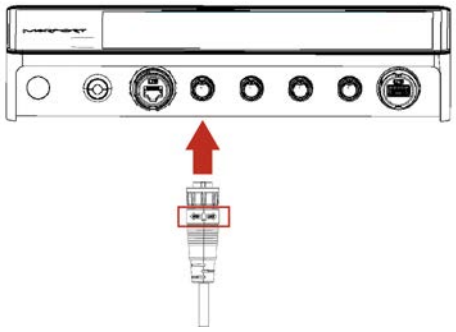
2. Place the sensor and charger in a dry room like the deck or bridge. The optimal temperature while charging is between 10 and 25 °C.
3. Place the sensor away from any installing material (e.g. wet ropes) and fix the sensor with brackets to keep it stable while charging.
4. Allow good air circulation around the charger for cooling.
5. Connect the 3-pin charging connector to the sensor shoulder bolts.

6. You can apply a small film of electrical contact grease lubricant on pins.

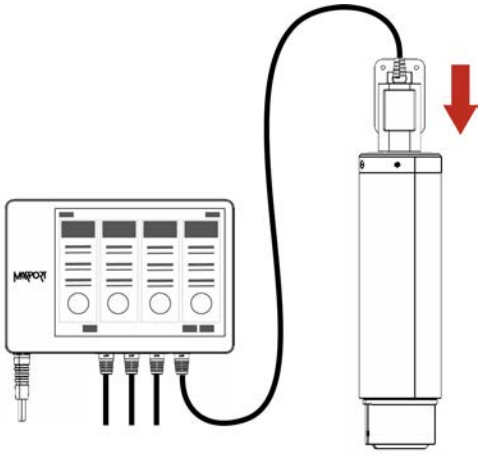
   Tip: To maintain the electrical pins, polish them with fine sandpaper.

7. Plug in the charger to a 115-230 Vac 50-60 Hz socket.
8. To charge with a Dock:

   a) Make sure the Dock is connected to a power supply and turned on.
   b) Connect the charger plug to one of the 4 charging ports.



   c) 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.

9. To charge with a Basic/Medusa Charger:

   a) If you have the Medusa multi-charger, turn the power switch to the **ON** position. The power switch lights on. If not, check the AC power cord connection.
   b) Connect the 3-pin charging connector to the sensor shoulder bolts.
   c) Look at the LED(s) on the charger box to know the charge status. For the multi-charger, there is a LED for each sensor charging cable. The charge status are:

- Green LED: > 90 %
- Orange LED: from 70 % to 90 %
- Red LED: < 70 %

Note: If the sensor is in configuration mode, it will begin to charge after 10 minutes. As long as it is in configuration mode, the charger's LED remains red, whatever the charge level.

10. Wait for the battery to charge: standard charging cycle takes 8 to 12 hours. A fast charge configuration allows a 70 % charge in 1 hour and full charge in 4 hours.

Results

Once charged, the operational life time can be up to approximately 24 hours for a Seine Explorer and 744 hours for a Seine sensor.

The operational life time depends especially on the uplink power of the sensor, but also on the sounding range, uplink frequency and options activated.

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:

- Remove any marine life with a piece of wood or screwdriver.
- Wash away mud or debris with warm water.

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

CAUTION: 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 57 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 shorting the center lug to the negative lug, 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 Scala.

Troubleshooting

Learn how to solve common problems.

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**:
   1. Click the magnifying glass from the top right corner of your screen and type `Terminal`.
   2. Click **Terminal** from the results.
   3. Enter in the terminal: `sudo spctl --master-disable`.
   4. Press Enter.
      Anywhere option is now displayed in **Security & Privacy** preferences.

Sensor cannot connect in wireless connection

When trying to connect to the sensor by wireless connection, the sensor appears on Mosa2 discovery area but you cannot click it OR the sensor does not appear on the discovery area.

Remember: First, always connect the sensor to a charger, then disconnect it. The sensor will reboot and this may resolve the issue.

➜ The sensor is out of the range of the wireless signal.

- Bring the sensor closer to the computer.

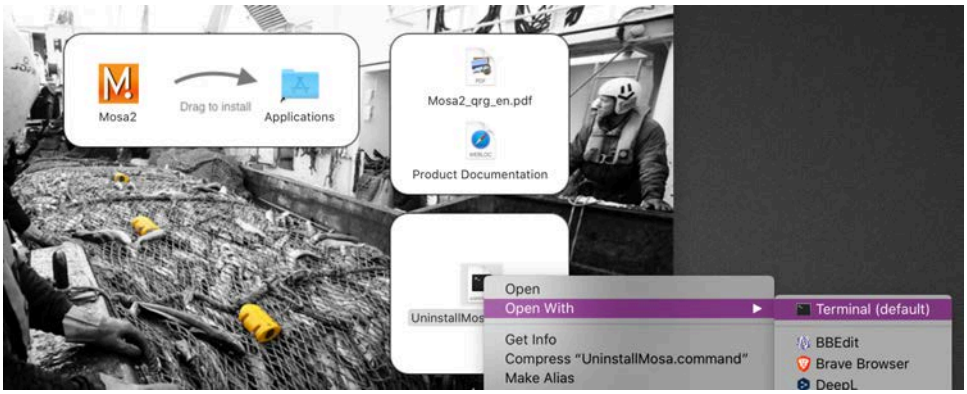
➜ If the sensor is not detected by Mosa2, the issue might come from the short-range wireless connection of the computer.

1. Close Mosa2.
2. Click the short-range wireless symbol in the top-right corner of the menu bar while holding the Shift (#) + ALT (#) keys on your Mac's keyboard.
3. Click **Debug** > **Remove all devices**.
4. Open Mosa2.

➜ In some cases, the computer keeps an history of some wireless devices and this interfere with the correct detection of sensors. You need to launch a script to uninstall Mosa2 and erase all wireless preferences.

1. Double-click the DMG file of a Mosa2 version **02.03.00 and after**.

2. Right-click **UninstallMosa.command** and select **Open With** > **Terminal**.



3. From the terminal window, enter your computer password and press **Enter**.

   Note: For security reasons, the terminal window will not display anything when you type the password.

   The terminal window displays **Process completed** when the script is completed. Mosa2 is uninstalled from your computer and all wireless settings on the computer are erased.

4. Open the DMG file to install Mosa2 again.

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 Scala 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 configuration wizard, the sensor does not respond.

- 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.

Echogram is fixed and blue

The echogram displayed in Scala/Scala2 is completely blue. There is no yellow line moving on top of the echogram, which means that no sonar data is received.

➜ Sounder frequency may be outside the correct frequency range.

1. From Mosa2, click **Trawl Explorer** > **Ping Down Frequency** and check that the frequency is between 120-210 kHz.
2. If not, change the frequency.

➜ You may have dragged and dropped wrong sonar data to the display.

1. Check that the name of the sensor on the top left corner of the echogram is Trawl Explorer.
2. If not, from **Trawl Explorer** sensor data, click + hold **Range of Sonar Data** and drag it to the page.

➜ The sounder in the transducer is damaged.

- Contact the support service for repair.

Data in Scala/Scala2 is wrong

Data displayed in Scala/Scala2 is wrong. For sensors with echograms, the echogram is noisy.

➜ There are signal interferences.

1. First, check that the sensor frequencies and telegrams are the same in the sensor configuration (via Mosa2) and the receiver configuration (via Scala/Scala2 or the system web page).
2. Check the frequencies of your other sensors and make sure there is enough distance between them.
3. Check the noise on the spectrum (see Checking Noise Interference on page 51). If the frequency where the sensor is placed is too noisy, change for a less noisy frequency:
   1. Seine sensors with depth and options: see Configuring Seine Sensor Telegrams on page 25
   2. Seine Explorer: see Configuring the Uplink, Up (Side) and Down Settings on page 20

Important: Do not forget to also change the frequency on the system web page (accessible through Scala/Scala2 receiver page).

4. You can increase the uplink power of the sensor to increase the power of the signal transmitted to the receiver: see Configuring the Uplink Power on page 28.
5. For sensors with echograms you can change the Echogram filter on the system web page (Scala/Scala2 receiver page):
    1. From Scala/Scala2, click **Menu** ☰ > **Expert Mode** and enter the password `copernic`.
    2. Scala Click menu again, then **Receivers**.
    3. Scala2 Right-click the IP address of the receiver at the bottom of the page, then click **Configure Receiver**.
    4. From the left side of the page, click the name of the sensor.
    5. From the sensor configuration page, click **Configure** next to **Filter**.
    6. From NBTE Echograms Filter select **Echosounder and Interference Reduction Medium** or **High**.

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

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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.

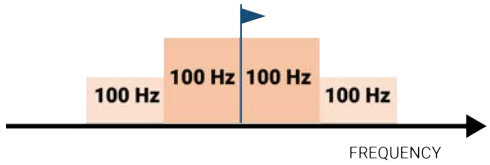


Figure 1: PRP sensors (e.g. Catch sensor, Trawl Speed, Spread sensor...)

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

Figure 2: Marport Pro sensors (e.g. Trident, Door Explorer)

Example: If the frequency of the sensor is 40kHz, there should be no sensors between 39.8-40kHz and 40-50.2kHz.

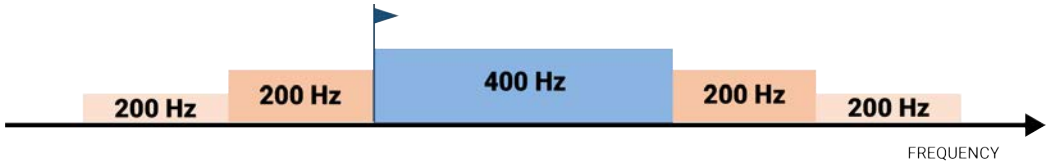


Figure 3: NBTE sensors (e.g. Speed Explorer, Trawl Explorer, Catch Explorer, Door Sounder)

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

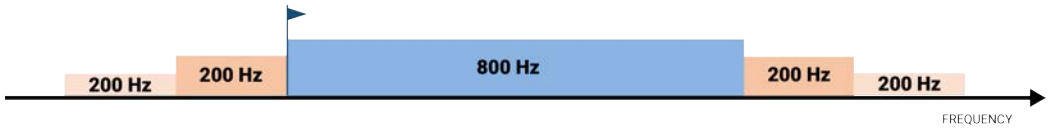


Figure 4: HDTE narrow band mode

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

Figure 5: HDTE wide band mode

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

Frequency of the sensor

Bandwidth

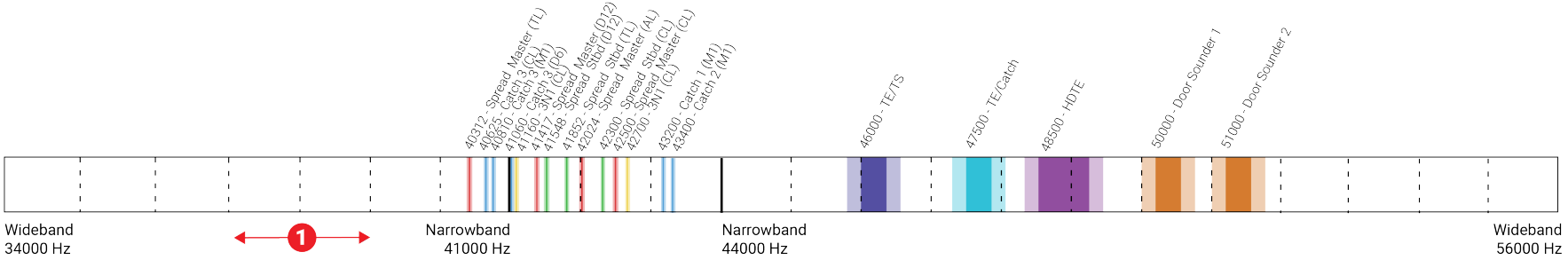
Mandatory distance with other sensors

Recommended distance with other sensors

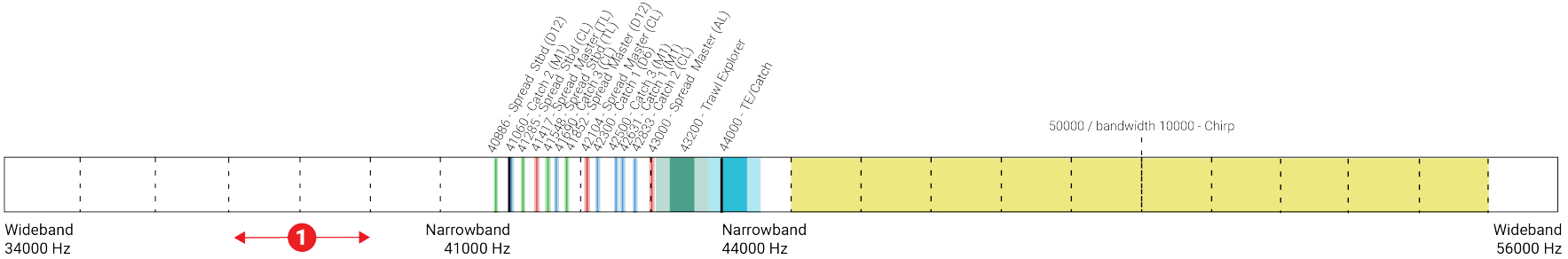
Examples of frequency allocations

- 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.

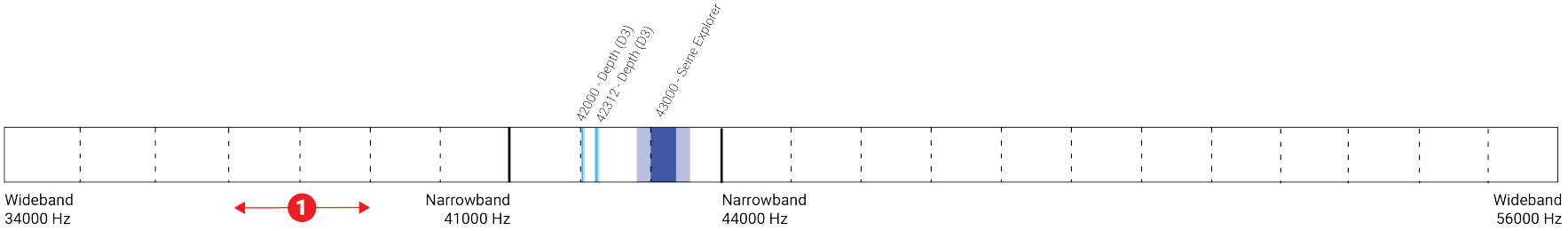
Example of a system with Spread, Catch, Trawl Speed sensors and Speed Explorer, Catch Explorer, HDTE and Door Sounder.



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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