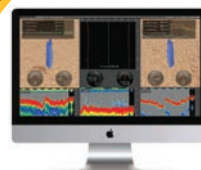





M3 & M5 Systems User Manual



MARPORT

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Legal

History

V1	05/10/17	First release
V2	07/12/17	<ul style="list-style-type: none"> • Added new hydrophone cabling procedures • Installing ShipModul Multiplexer : now includes cabling and detection procedures for different network setups. • Active Wideband Hydrophone : now includes configurations for second generation of pre-amplifiers. • Revised guidance on the Passive Hydrophone + Wideband Preamplifier : configuration 3 was missing a strap to set a low gain.
V3	03/09/18	<ul style="list-style-type: none"> • New active wideband hydrophones (NC-1-08) documented. • Added hydrophone cabling procedures. • New topic Adding TE SC Sensor to the Receiver
V4	07/06/18	<ul style="list-style-type: none"> • NC-1-08 hydrophones with serial number 4054875, 4054845, 4054831 and after, connect the -12V wire. NC-1-08 hydrophones with a lower serial number need to be returned and replaced. • Added guidelines on how to connect Marport hydrophones without using a junction box. • Interference Check on page 28: more detailed information about Spectrum page.
V5	11/30/18	<ul style="list-style-type: none"> • Adding Temperature Data from the Hydrophones to the System on page 25: how to display on Scala the temperature of the water surface received from the hydrophones. • Product references have been added in equipment list. • Frequency Plan on page 38: drawings have been changed, frequencies are now allocated between 34 kHz and 36 kHz and frequency ranges of narrowband and wideband hydrophones are indicated.

V6	04/08/19	<ul style="list-style-type: none"> • New Mac mini 2018 is now documented. • Hydrophone cabling procedures have been removed from the system documentation. You can find them in the Hydrophone Installation Manual.
V7	07/16/20	<p>Now documents Mosa2 version 02.03, Scala version 01.06.34 and Scala2 version 02.02.</p> <p>TE SC sensor is no longer documented in this guide.</p>
V8	03/08/21	<ul style="list-style-type: none"> • Now documents Mosa2 version 02.11.x. • Added guidance on how to prevent computer and receiver from being damaged by water in Installing the System on page 16. • Added contact details for the sales offices in South Africa and Norway in Support Contact on page 37.
V9	01/06/22	<ul style="list-style-type: none"> • Added list of supported Apple operating systems for Scala and Mosa2 in Compatibility with Apple Operating Systems on page 12. • Added note: The new Mac mini 2018 are delivered with Fusion 12 PRO license, compatible only with macOS Catalina or later.
V10	08/04/22	<ul style="list-style-type: none"> • Now documents Scala2 version 02.10.x and Mosa2 version 02.11.x.

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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.

U.S. Patent 9,091,790

Introduction and Presentation

Read this section to get a basic knowledge of your M3 system.

Introduction

Among Marport's receivers, the M3 is specifically designed for smaller vessels.

Marport M3 is designed as a highly sophisticated multi-function acoustic receiver. Although it is the most compact receiver from Marport, it uses leading edge digital signal processing that we have combined with the smartest software available. The aim is to make possible multi-channel operation without any compromise between transmission range and signal detection.

The M3 works with an Apple Mac Mini computer, that processes the data from the sensors and displays them on your screen.

The M3 has a full range of capabilities:

- You can listen to 3 hydrophones simultaneously. Only data coming from the hydrophone delivering the best signal are interpreted. As a result, you do not need an hydrophone selection switch, as often used in older types of receivers.
- You can have a simultaneous reception from up to 12 data (depth, pitch, roll...) from standard sensors (e.g. door spread, catch).
- You can combine standard sensors with 1 high-definition reception sensor (e.g. HDTE or NBTE sensor such as trawl explorer, catch explorer).
- You can configure your sensors to have a net monitoring configuration that suits your type of trawl's gear.
- There are 1 NMEA and 2 NTC entries to receive hydrophones' temperature data.

You can upgrade the M3 system to an M5 system to be able to add more standard (up to 100 PRP sensors) and high-definition sensors (up to 10).



Note:


Scala

These labels tag topics or actions that are specific to Scala and/or Scala2.

Scala2

Depending on the version you have, you may follow either one of these labels.

Safety Guidelines

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

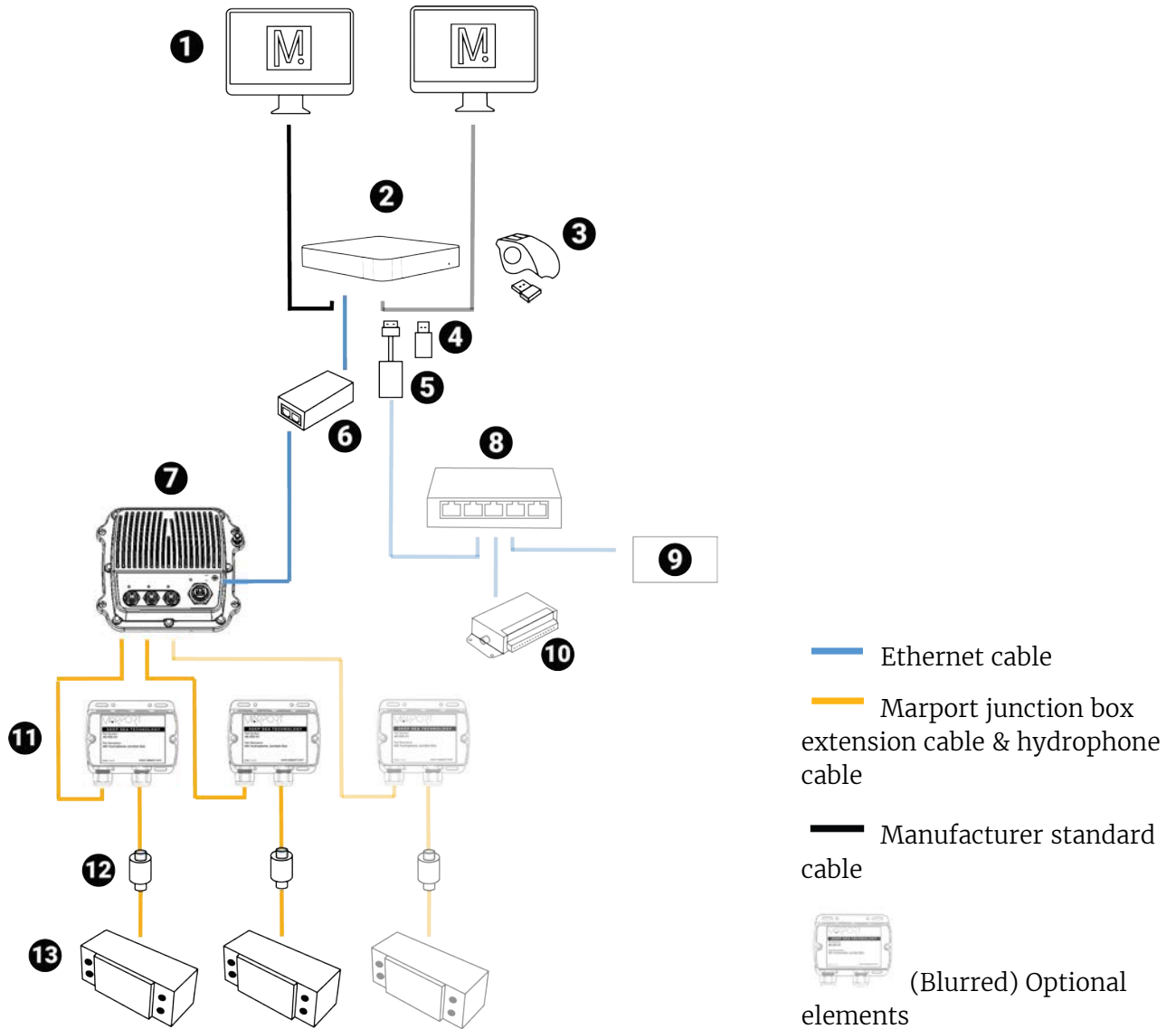
Product installation and use

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 installation and maintenance interventions.

Description

M3 System Overall Architecture



- 1** Screen(s)
- 2** Mac Mini i5 (ref. PC-0-03)
- 3** Wireless trackball mouse
- 4** Scala/Scala2 software dongle
- 5** USB Ethernet Adapter
- 6** PoE adapter (ref. 25-766-01)
- 7** Mx Receiver (ref. M3REC/M5REC)

- 8** Ethernet switch
- 9** Internet
- 10** NMEA multiplexer
- 11** Junction boxes (x2) (ref. 46-055-01)
- 12** Thru-hull penetration (ref. TH-1-XX)
- 13** Hydrophones (ref. NC-1-XX)

Equipment List

Below are the hardware and software required to install a M3 system. Box 1 and 2 contain the minimum hardware needed to install the system.

Box 1: Receiver (M3REC/M5REC)

- 1 receiver
- 2 Mx hydrophone junction boxes (ref. 46-055-01)
- 1 CAT5e network cable
- 1 Ethernet connector kit
- 1 Mx hardware kit (mounting screws and ground strap)


Box 2: Computer (PC-0-03)

- 1 Mac mini i5 computer (2.6 GHz)
- 1 wireless trackball mouse
- 1 Mac mini power cord
- 2 Thunderbolt to HDMI/VGA/DVI adapters
- 1 USB Ethernet adapter
- 1 USB serial adapter
- 1 Ethernet cable for PoE adapter
- PoE adapter (ref. 25-766-01)
- 1 Mac mini mount (ref. 25-786-01)
- 1 hardware kit (mounting screws for Mac mini mount)
- 1 Scala/Scala2 software dongle

Optional equipment (not included)

- 1 to 2 monitors
- 1 Uninterruptible Power Supply (UPS) to prevent problems if the mains power fails (recommended). Size: 500VA.
- Additional hydrophone junction boxes
- 1 test hydrophone that you can keep on board and connect to the receiver to do functional tests.
- 1 NMEA converter junction box (ref. NC-2-TEMP) to receive temperature data from hydrophones
- 1 NMEA multiplexer to receive NMEA data and display them in Scala/Scala2: ShipModul MiniPlex-3E-N2K if using NMEA2000 and NMEA0183 or Miniplex-3E if using only NMEA0183.
- If using Mosa2 on a tablet computer: refer to Marport sales offices to know the recommended model.

Software

Software Application Name	Definition
Marport validated MacOS	Operating system on computer
VMware Fusion	Virtual machine software, necessary to run processor virtual machine.
Scala/Scala2	Marport software application collecting, processing, storing and displaying data received from sensors, sounders and other connected devices.
Scala Replay/ScalaReplay2	Marport software application replaying data recorded in Scala/Scala2.
Mosa2	Marport software application used to configure sensors. Can be used on desktop or tablet computers.
Mozilla Firefox	Web browser. Allows to display the system web page (access to Mx receiver and processor configuration).  Note: Use version 34 available on MASP if you need to import or export the receiver configuration using M4F files.
Java (version 7 or lower)	Only if you need to import or export the receiver configuration using M4F files, via the system web page open in Mozilla Firefox version 34.
FileZilla	File management tool.
TeamViewer	To give remote access of your computer to support service

Technical Specifications

Frequency range	30-60 kHz
Active bandwidth	24 kHz
Number of Rx/Tx channels	3
Hydrophones	3
Bearing to sensor measurement	Yes
Distance to sensor measurement	Yes
M3 - Number of simultaneous data reception	12
M3 - Number of high resolution sounders (NBTE, HDTE)	1
M5 - Number of simultaneous data reception	50
M5 - Number of high resolution sounders (NBTE, HDTE)	10

Temperature input	2 NTC + 1 NMEA
Network cables	CAT5e, 100 meters max., U/FTP shielding

Compatibility with Apple Operating Systems

This topic lists the supported Apple operating systems for Scala/Scala2 and Mosa2.

Scala/Scala2

OS name	OS release	Scala 1.x	Scala 2.0.x	Scala 2.2.x	Scala 2.4.x	Scala 2.6.x	Scala 2.10.x
Monterey	macOS 12.4				Yes	Yes	Yes
Big Sur	macOS 11.0				Yes	Yes	Yes
Catalina	macOS 10.15		Yes	Yes	Yes	Yes	Yes
Mojave	macOS 10.14	Yes	Yes	Yes	Yes	Yes	Yes
High Sierra	macOS 10.13	Yes	Yes	Yes	Yes	Yes	
Sierra	macOS 10.12	Yes	Yes	Yes	Yes		
El Capitan	OS X 10.11	Yes	Yes	Yes	Yes		
Yosemite	OS X 10.10	Yes					
Mavericks	OS X 10.9	Yes					

Mosa2

OS name	OS release	Mosa 2.0.x	Mosa 2.3.x	Mosa 2.5.x	Mosa 2.7.x	Mosa 2.9.x	Mosa 2.11.x
Monterey	macOS 12.4				Yes	Yes	Yes*
Big Sur	macOS 11.0				Yes	Yes	Yes
Catalina	macOS 10.15	Yes	Yes	Yes	Yes	Yes	Yes
Mojave	macOS 10.14	Yes	Yes	Yes	Yes	Yes	Yes
High Sierra	macOS 10.13	Yes	Yes	Yes	Yes	Yes	Yes

OS name	OS release	Mosa 2.0.x	Mosa 2.3.x	Mosa 2.5.x	Mosa 2.7.x	Mosa 2.9.x	Mosa 2.11.x
Sierra	macOS 10.12	Yes	Yes	Yes	Yes	Yes	
El Capitan	OS X 10.11	Yes	Yes				
Yosemite	OS X 10.10	Yes	Yes				
Mavericks	OS X 10.9	Yes	Yes				

***Mosa 2.11 compatibility with Monterey:** A1 sensors cannot connect by short range wireless signal. You must use a Configuration Cable.


Computer Configuration

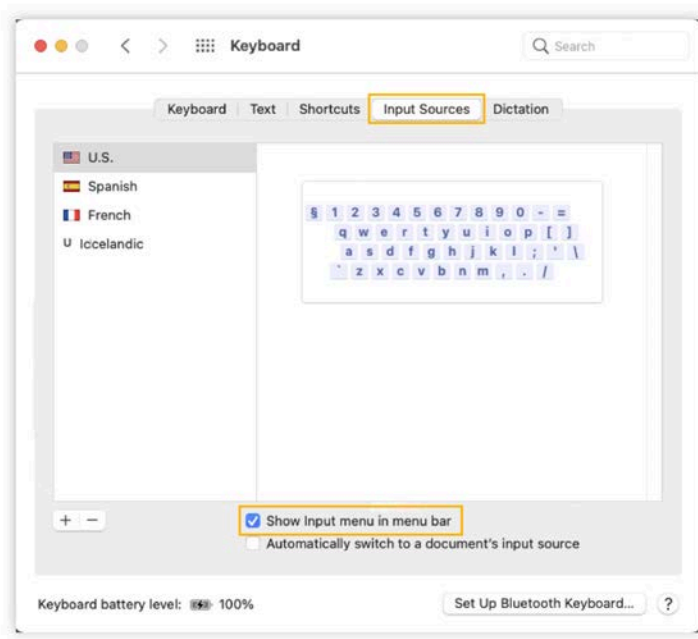
Read this section to learn how to configure the Mac computer.

Adding a Virtual Keyboard

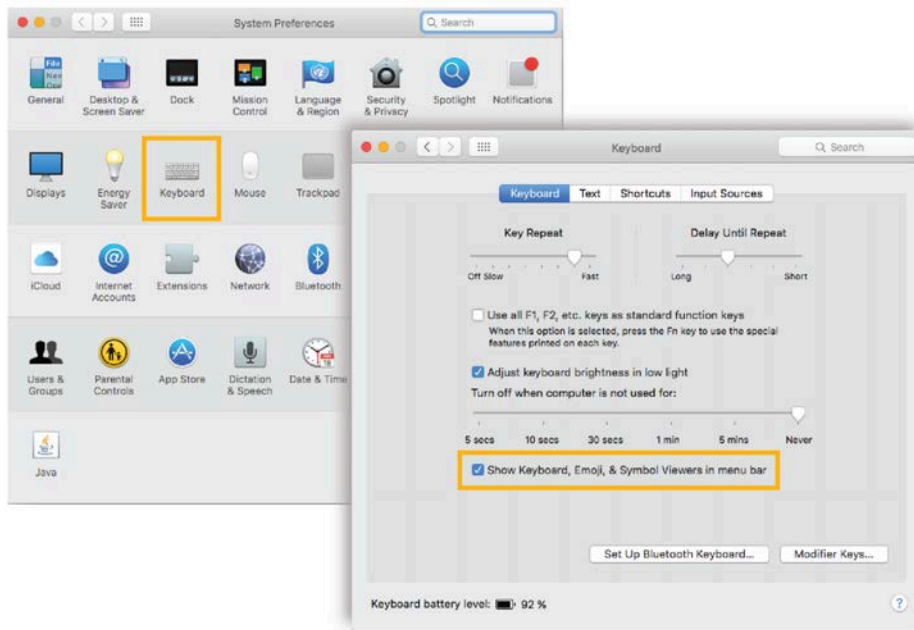
If you do not have a keyboard, you can add a virtual keyboard to the screen and type words using the mouse.

Procedure

1. From the top left corner of the screen, click **Apple Menu**  > **System Preferences** > **Keyboard**.
2. **macOS Big Sur or later:** Click the tab **Input Sources** and select **Show Input menu in menu bar**.



3. **macOS Catalina or earlier:** Select **Show Keyboard, Emoji, & Symbol Viewers in menu bar**.

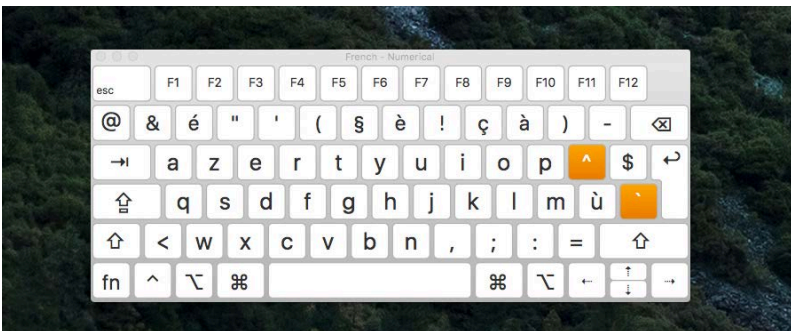


4. Close the window.
5. From the top right corner of the screen, click the flag corresponding to the keyboard language preferences, then select **Show Keyboard Viewer**.



Results

A virtual keyboard is displayed on the screen. You can change its size by dragging its corners.



Installation

Read this section to learn how to connect and configure the equipment of the M3 system.

Installing the System

Marport technicians or dealers need to connect the different components of the system.

About this task



Note: The system is installed by Marport or by a dealer. If there is a problem, you can read these installation steps to check the system installation.

Procedure

1. Check that you have all the items needed for the installation (See [Equipment List](#) on page 10)
2. Install the hydrophones and their cables, or find the cables from hydrophones that have already been installed.
3. Route the hydrophone cables toward the junction boxes.
4. Put the receiver elevated and/or fixed vertically on a wall in a dry and clean area, as close as possible to the hydrophones. If the receiver is in a closed environment, make sure it is enough ventilated and that the ambient temperature does not exceed 55 °C (131 °F).



Note: Make sure that the cables from the junction box are long enough to reach the receiver.

5. Put the Mac mini mounting bracket elevated and/or fixed vertically on a wall in a dry and ventilated area, without dust, in the wheelhouse.



CAUTION: The receivers are water resistant but not waterproof. The computers are not water resistant. In order to prevent the equipment from being damaged by water:

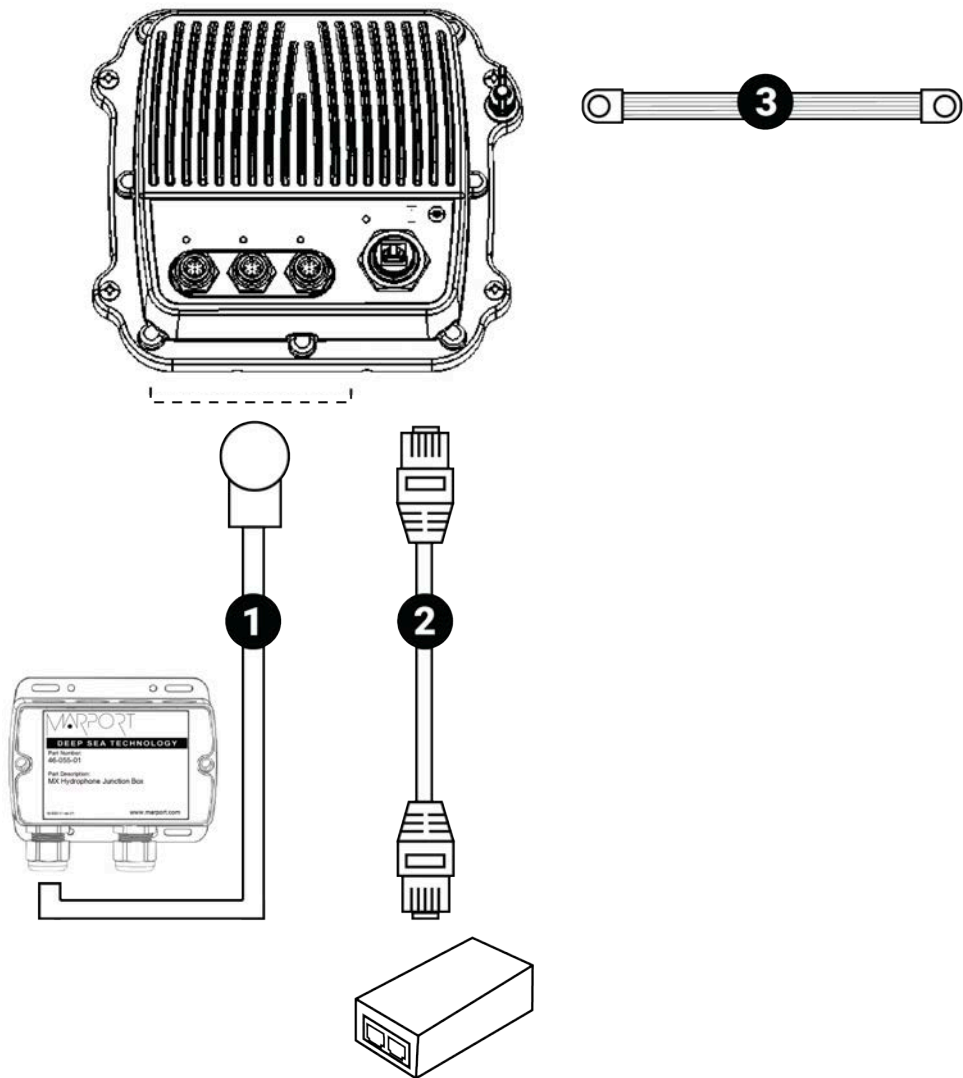
- Do not install the receiver and computer directly on the floor.
- The cable connectors must not point upwards.

6. From the mounting bracket:
 - a) Connect an Ethernet cable from the PoE (computer slot) to the Mac mini.
 - b) Connect an Ethernet cable from the PoE (OSU power slot) to the receiver.
 - c) Connect the power cable to a power supply or UPS if you have one (recommended).
7. Remove the lock screw from the Mac mini mounting bracket, and slide the Mac mini into it. Put the lock screw back and fasten it.
8. Install the monitor(s).
9. Install loudspeakers, if applicable.
10. You can switch on the computer.
11. Configure the networks.
12. Connect the hydrophone cables to the junction boxes and connect the junction boxes to the hydrophone connectors on the receivers Refer to Hydrophone installation manual for detailed guidelines.


13. When adding sensors to the system, refer to the [Frequency Plan](#) on page 38 to help you allocating frequencies.

M3 Receiver Cabling

Connect the M3 receiver according to the following cabling.



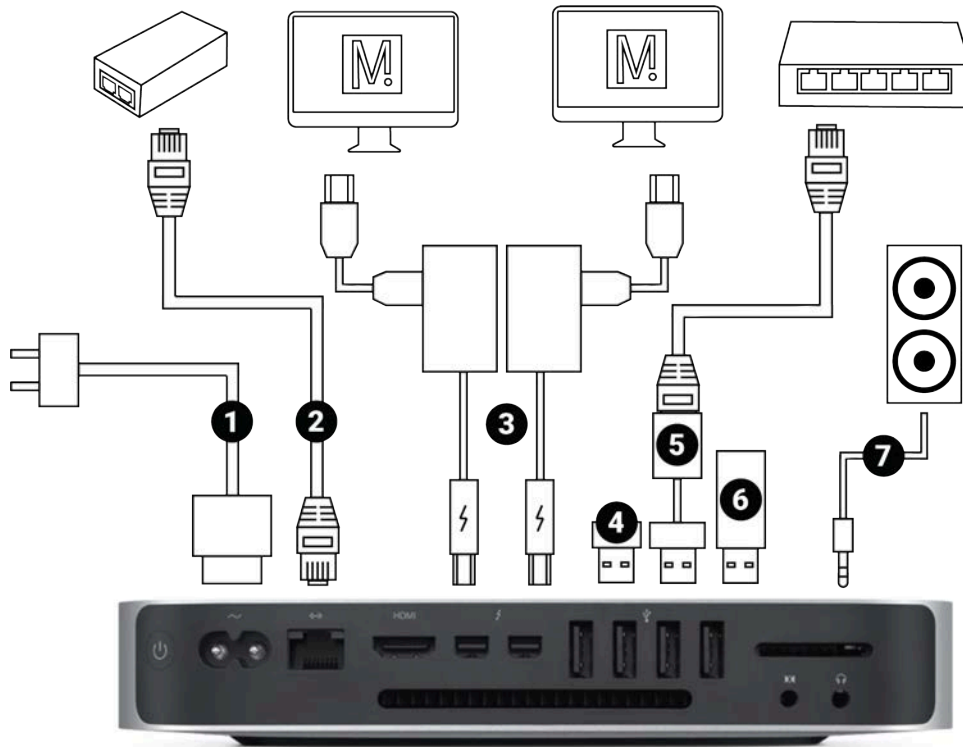
	Cable	Connected to
1	Marport junction box extension cable	Junction box
2	Ethernet cable	PoE injector in Mac mini mounting bracket (OSU power slot)
3	Ground strap	Grounded to the ship ground

! **Important:** Do not press the button  on the receiver. It changes the IP address of the receiver and you will not receive data anymore.

Mac Mini Cabling

Connect the Mac Mini according to the following cabling.

Mac mini 2014



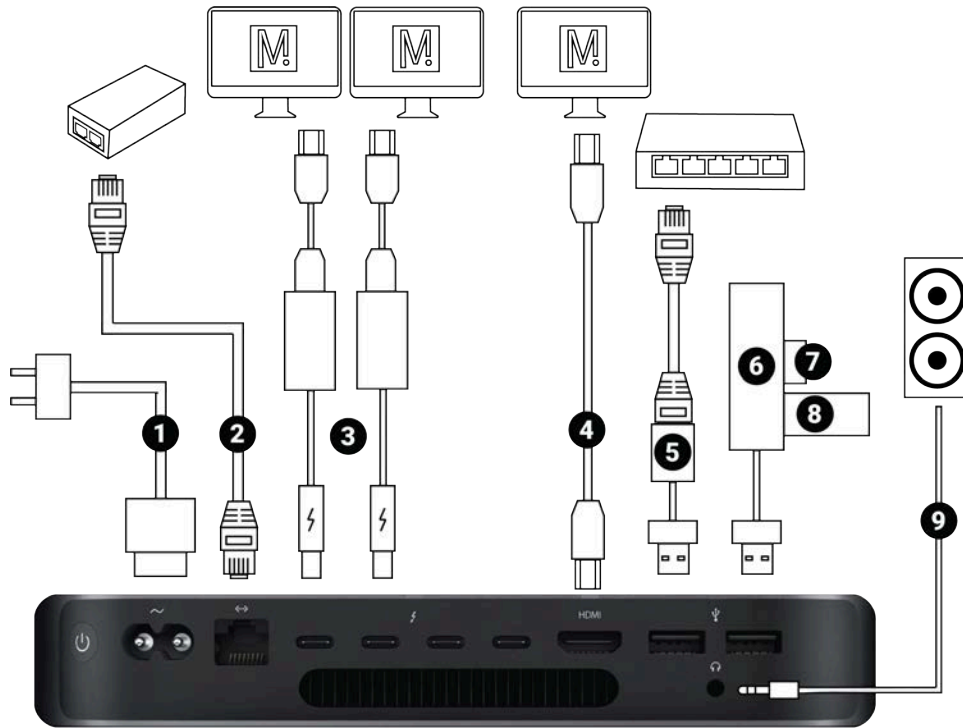
	Cable	Connected to
1	Power cable	100-240V AC power supply*
2	Ethernet cable	PoE injector in mounting bracket (computer slot)
3	Thunderbolt to HDMI/VGA/DVI adapters † + monitor cable	Monitor 1 and 2
4	USB trackball transmitter	Wireless trackball mouse
5	USB to Ethernet adapter + Ethernet cable	Ethernet switch ‡
6	Scala/Scala2 software dongle	-
7	Audio cable	Loudspeakers

* We recommend to use an Uninterruptible Power Supply (UPS) to prevent problems if the mains power fails.

† Or thunderbolt cable if monitor is compatible

‡ The Ethernet cable can be connected directly to an internet access if you have no NMEA multiplexer, or directly to the NMEA multiplexer if no internet access. Using an Ethernet switch is only useful if you need to connect to both the NMEA multiplexer and the internet.

Mac mini 2018



	Cable	Connected to
1	Power cable	100-240V AC power supply*
2	Ethernet cable	PoE injector in mounting bracket (computer slot)
3	Thunderbolt to HDMI/VGA/DVI adapters † + monitor cable	Monitor 1 and 2
4	HDMI/VGA/DVI cable	Monitor 3
5	USB to Ethernet adapter + Ethernet cable	Ethernet switch ‡
6	USB splitter	USB trackball transmitter and Scala/Scala2 software dongle
7	USB trackball transmitter	Wireless trackball mouse
8	Scala/Scala2 software dongle	-
9	Audio cable	Loudspeakers

* We recommend to use an Uninterruptible Power Supply (UPS) to prevent problems if the mains power fails.

† Or thunderbolt cable if monitor is compatible

‡ The Ethernet cable can be connected directly to an internet access if you have no external device (such as an NMEA multiplexer), or directly to the external device if no internet access. Using an Ethernet switch is only useful if you need to connect to both the external device(s) and the internet.

Installing Hydrophones

You need to connect hydrophones to the system.



Note: For more information about Marport hydrophones, please refer to Hydrophone Installation Manual.

List of Marport Hydrophones

These are technical specifications for hydrophones currently sold by Marport. For information about obsolete hydrophones, please contact Marport support.

Product reference	Name	Use case	Bandwidth (3 dB)	Typical current consumption	Cable*
NC-1-05	Passive wideband hydrophone (no preamplifier)	<ul style="list-style-type: none"> • Vessel with very low level of noise (below -110 dBV). • Sensors close to the vessel (approx. 300 m) • For positioning systems with Slant Range/pinger (one passive hydrophone is necessary for transmission). 	33-60 KHz	0.0 mA	Blue
NC-1-05 + NC-2-02	Passive hydrophone + Wideband preamplifier box	<ul style="list-style-type: none"> • Vessel with normal level of noise (below -100 dBV). • Large number of sensors.† • Use at great depths (> 500 m). • Gain configurable (Low or High) • Filters configurable (38 and/or 50kHz). • Low noise environment between passive hydrophone and wideband preamplifier box 	33-60 KHz	25-29 mA	Blue

Product reference	Name	Use case	Bandwidth (3 dB)	Typical current consumption	Cable*
NC-1-07	Active hydrophone (integrated preamplifier)	<ul style="list-style-type: none"> • Vessel with normal level of noise (below -100 dBV). • Limited number of sensors.† • No filtering options. • Not used for positioning system 	41-44 KHz	4-6 mA	Green
NC-1-06	Active wideband hydrophone (integrated preamplifier)	<ul style="list-style-type: none"> • Vessel with normal level of noise (below -100 dBV). • Large number of sensors.† • Use at great depths (> 500 m). • Gain configurable (Low or High) • Filters configurable (38 and/or 50kHz) 	30-60 KHz	25-29 mA	Yellow
NC-1-08	Active wideband hydrophone (integrated preamplifier)	<ul style="list-style-type: none"> • Vessel with normal level of noise (below -100 dBV). • Large number of sensors.† • Use at great depths (> 500 m). • Gain configurable (Low or High) • Filters configurable (38 and/or 50kHz) 	30-60 KHz	18-22 mA	Yellow

Product reference	Name	Use case	Bandwidth (3 dB)	Typical current consumption	Cable*
NC-1-09 ‡	Active hydrophone (integrated preamplifier)	<ul style="list-style-type: none"> • For use on a paravane only • Vessel with normal level of noise (below -100 dBV). • Limited number of sensors.† • No filtering options. • Not used for positioning system 	41-44 KHz	4-6 mA	Blue, heavy-duty

*Note that cables are colored according to the type of hydrophone: blue for passive, green for active narrowband and yellow for active wideband.

† Standard active hydrophones have an available bandwidth of 6kHz. So, if: $(PRP_number * 100) + (NBTE_number * 800) < 6000$ you have enough place. If: $(PRP_number * 100) + (NBTE_number * 800) > 6000$ then you need a wideband hydrophone.

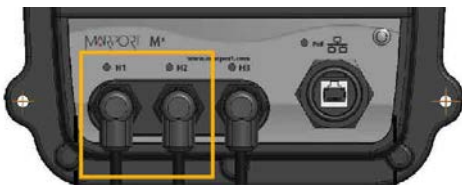
‡ Add as NC-1-07 in the system web page.

Connecting the Hydrophone to the Receiver

You need to connect the hydrophone to the receiver to be able to display sensor data received by the hydrophones.

Procedure

- Connect the extension cable of the junction box to a hydrophone input on the receiver:
- Connect to the NTC hydrophone input H1 or H2 to be able to receive water temperature from Marport hydrophones.



Note: H3 hydrophone input allows to receive water temperature from an NMEA connection (Scanmar hydrophone or NMEA converter junction box). If you connect a Marport hydrophone to H3 without NMEA converter, you will not have temperature data from the hydrophone.

Adding Temperature Data from the Hydrophones to the System

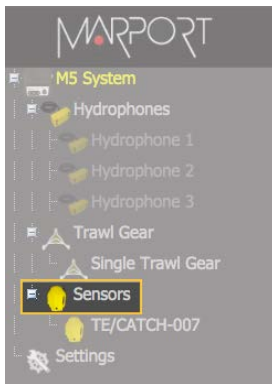
You can add the hydrophone to the receiver as a sensor in order to display in Scala/Scala2 the temperature of the water surface.

Before you begin

- ! Important:** In order to receive temperature data, make sure the hydrophone is connected to an NTC input on the receivers or is connected using an NMEA converter junction box. See [Connecting the Hydrophone to the Receiver](#) on page 24 for guidelines.

Procedure

1. From Scala/Scala2, click **Menu** ≡ > **Expert Mode** and enter the password `copernic`.
2. **Scala** Click **Menu** ≡ > **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 **Sensors**.



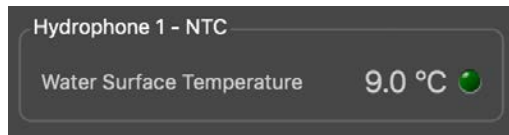
5. Under **Add Sensor Product**:
 - a) Select **Hydrophone** in the **Product Category** menu.
 - b) In the **Product Name** menu, select **NMEA temperature** if using an NMEA converter junction box, or **NTC temperature** if the hydrophone is connected to an NTC input.
 - c) In **Hydrophone Location**, select the number of the receiver's port on which the hydrophone is connected.



- d) Click **Add Sensor**.

Results

The water temperature is displayed in Scala/Scala2, in the control panels, under **Scala** **Sensors Data** / **Scala2** **Mx**.



Understanding Receiver LEDs

LEDs on the receiver are useful to know if the receiver is connected to the computer and what types of hydrophones are connected to the receiver.

Boot sequence

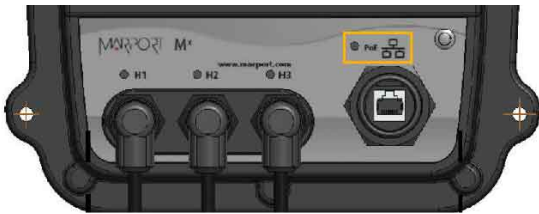
When the receiver restarts, the hydrophone and PoE LEDs light up according to a specific sequence. At the end of the sequence:

- LEDs are off if no hydrophone is configured.
- LEDs are red or blue if hydrophones are configured.

If one or several LEDs stay green after the boot sequence, there is a problem with the receiver. Contact your local support service.

PoE LED

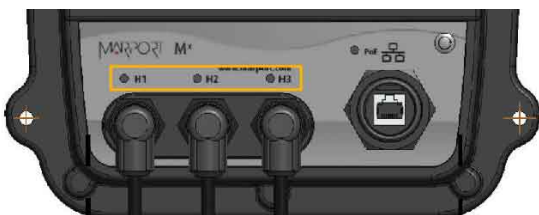
You can refer to the PoE LED color to know if the receiver is correctly connected to the computer.



- Blinking green: the receiver is connected to a power source and to the computer.
- Blinking blue: the receiver is connected to a power source but it is disconnected from the computer. Check that the computer is connected to the PoE adapter.
- Blinking red: Ethernet is resetting.

Hydrophone LEDs

The LEDs on the hydrophone inputs identify the type of hydrophone that is connected to the receiver.



- Blue: passive hydrophone
- Red: active hydrophone

- No light: no configured hydrophone

Maintenance and Troubleshooting

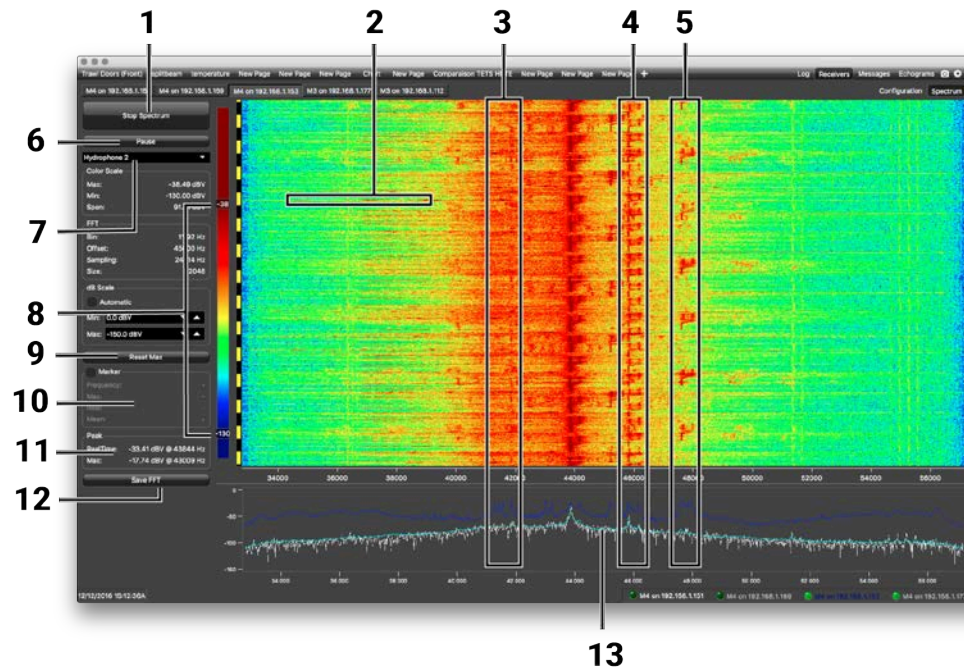
Read this section for troubleshooting and maintenance information.

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.



- | | |
|--|--|
| <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 10 Marker: display frequency and levels of noise (dB) at the mouse pointer location on the graph. 11 Peak: <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Dark blue line: maximum signal level • Cyan line: average signal level • White line: last received signal level |
|--|--|


Scala Checking Noise Interference

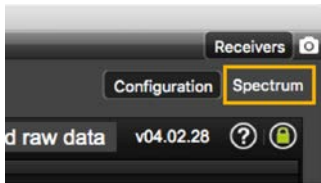
You can use the spectrum analyzer to check the noise level of the hydrophones and check for interference.

About this task

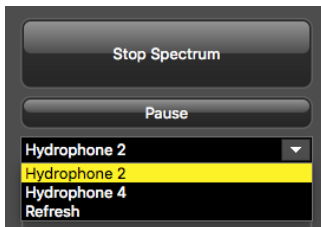
See [Spectrum Analyzer Display](#) on page 28 for details about the spectrum analyzer display.

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**.



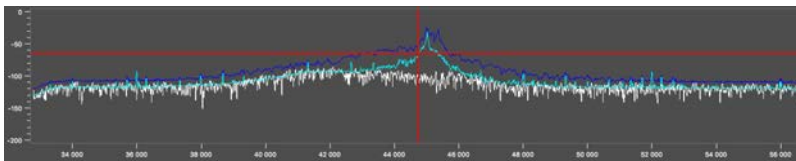
4. Select the hydrophone you want to test. Only the hydrophones that are switched on are displayed. Select refresh to update the list.



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:

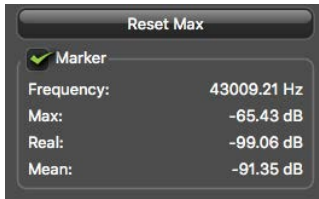
1. **RealTime** (white): level of noise recorded in real time.
2. **Mean** (cyan): mean recorded level of noise. It is useful to assess the noise floor.
3. **Max** (dark blue): shows the latest highest level of noise recorded. It is useful to see on which frequencies are the sensors.



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

- 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**.

- 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.
- 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.
- 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.
- 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).

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

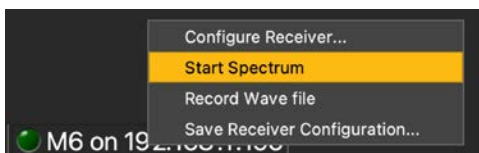
- When you have enough data, click **Stop Spectrum**.

Scala2 Checking Noise Interference

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

Procedure

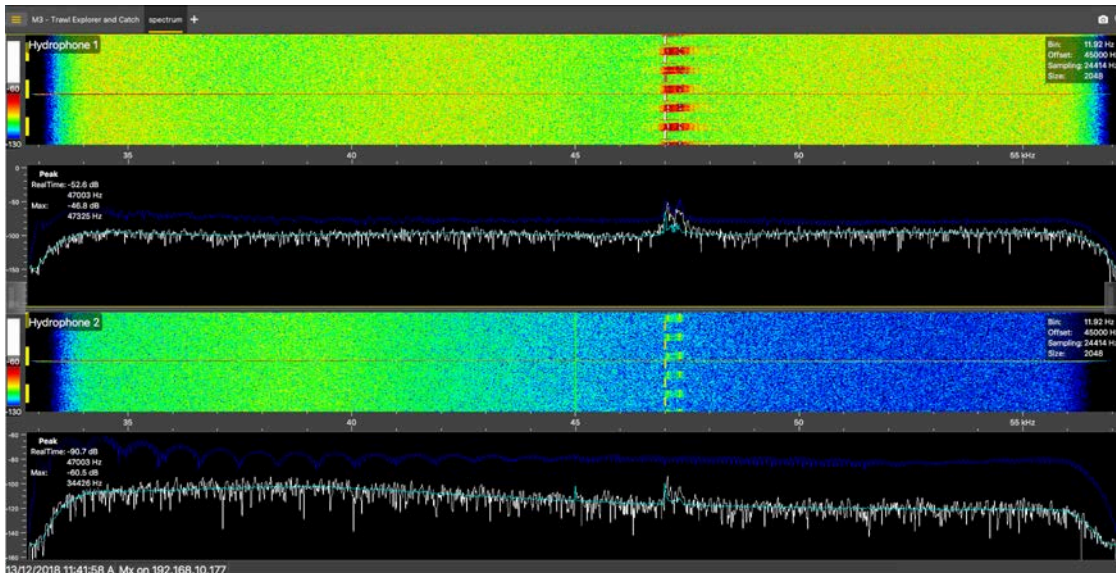
- Click Add + to create a new page on which you will add the spectrum analyzer(s).
- Right-click the IP address of the receiver in the status bar and click **Start Spectrum**.



- Open the control panels and go to the **Mx** panel.
- 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.



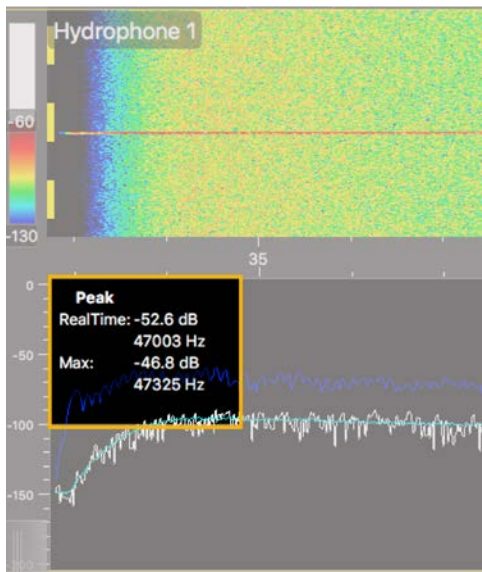
The FFT plot shows three levels of noise in dBV:

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

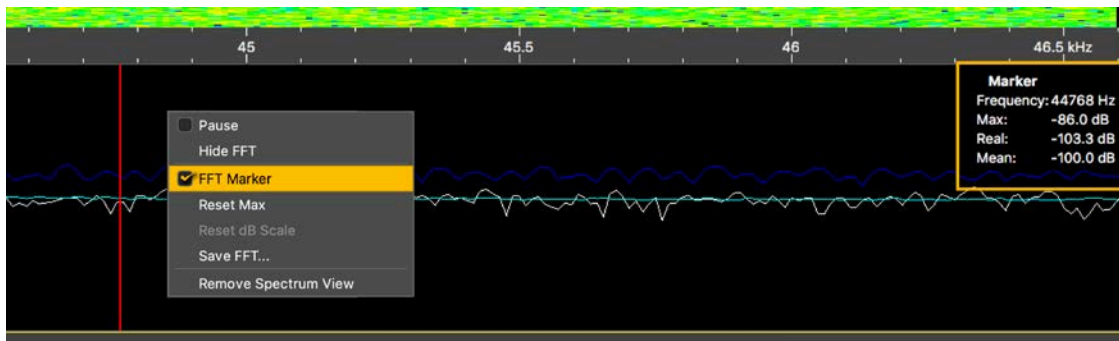
6. Scroll on the frequency or dBV scales to zoom in and out.
7. Under **Peak**, you can check:



- **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**.

Troubleshooting

Learn how to solve common problems.

Downloading a VMware Fusion license under version 10

You need to download a VMware Fusion PRO license but VMware Fusion website only sells version 10 licenses, that are not compatible with Mavericks, Yosemite, El Capitan or Sierra Mac OS.



Note: Compatible VMware Fusion licenses are the following:

- OS X Yosemite or Mavericks: Fusion 7 PRO.
- OS X El Capitan: Fusion 8 PRO.
- macOS Sierra: Fusion 8.5 PRO.
- macOS Mojave: Fusion 11 PRO.
- macOS Catalina: Fusion 11.5 to 12 PRO.
- macOS Big Sur: Fusion 12 PRO


→ If you need to download a VMware Fusion license under version 12, you need to do a specific procedure because older versions are not sold anymore:

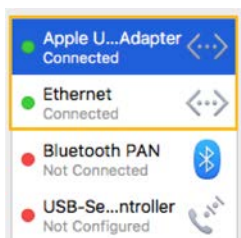
1. Buy a license for VMware Fusion 12.
2. Downgrade the license to the version you need.
3. Guidance can be found on VMware Fusion website: <https://kb.vmware.com/s/article/2006975>.

No Internet Access

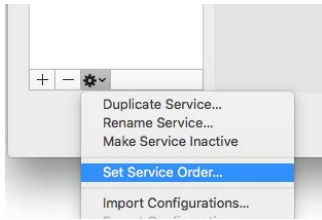
You cannot connect to the internet or see the system control panel page on Firefox web browser.

→ The order of the computer networks is wrong.

1. From the top left corner of the screen, click **Apple Menu**  > **System Preferences** > **Network**.
2. Make sure that the network called Apple USB Ethernet Adapter is at the top of the list, then is followed by the network called Ethernet.

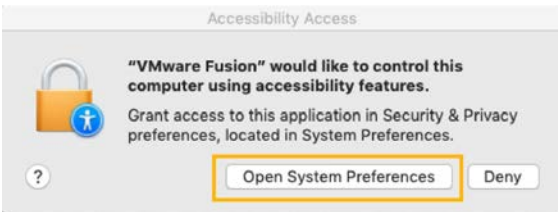


3. If not, to change the order click the tooth wheel icon at the bottom of the list and select **Set Service Order**.



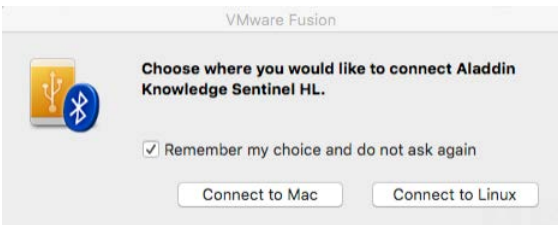
VMware Fusion Pop-Up Messages

The following message appears when starting VMware Fusion software:



→ You need to change the **Security & Privacy** preferences so that VMware Fusion can run on the computer.

The following VMware Fusion message appears when adding a new USB key:

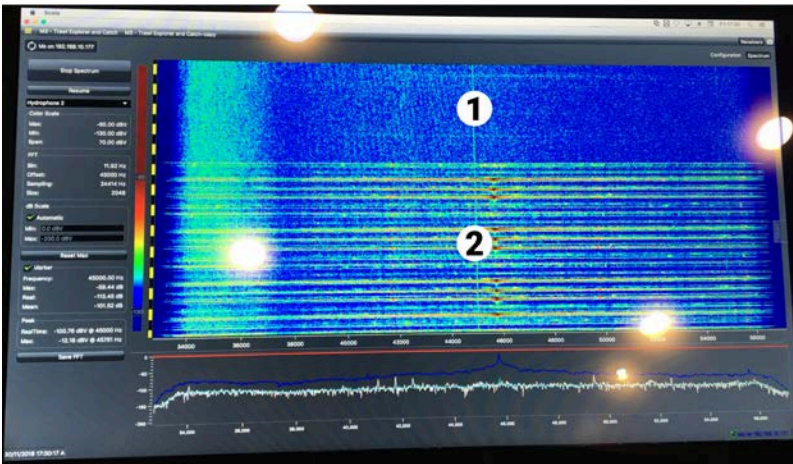


→ This message is due to the virtual machine (VMware Fusion) installed on the computer.

1. From the message box, select **Remember my choice and do not ask again**.
2. Click **Connect to Mac**.
3. If the M3-Processor window appears, click **⊖** to hide it. DO NOT close the M3-Processor window or you will have to reboot the system.

Antifouling System Causes Interferences

Sonihull™ Ultrasonic Antifouling System causes important noise interference. You can see below an example of spectrum on a hydrophone when Sonihull™ system is off (1) and when it is switched on (2).



→ You need to switch off Sonihull™ system while fishing.

Giving Remote Access to the Computer

If you have an issue with the system, you may need to give remote access to the computer to the support team with **TeamViewer** application.

Before you begin

You need to have access to a good internet connection.

Procedure

1. From the **Launchpad**  or Dock, click **TeamViewer**.



2. Check that you have the message **Ready to connect** at the bottom left corner of TeamViewer. If the message is **Not ready** it means you have no internet connection.
3. You can give access to your computer to the support team by giving them the ID and Password displayed under **Allow Remote Control**.

Recording Audio Files

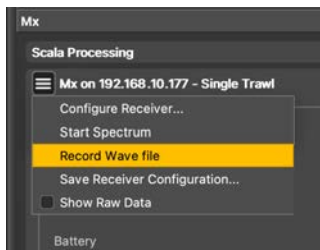
If there are issues with the reception of sensor data or with noise interference, the support service may need a recording of the system noise in order to analyze it.

Procedure

1. From the lower right corner of Scala/Scala2 window, right-click the receiver name, then click **Record WAV Files**.

The receiver name becomes yellow. The recording lasts 180 seconds.

2. Open the control panels and go to the **Mx** panel. Click the menu icon next to the name of the receiver and click **Record Wave file**.



3. When the recording is finished, click **OK** to download it.

The audio file is saved in:

4. Send the recording to Marport support service for a diagnosis.

Support Contact

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

FRANCE

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

NORWAY

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

SPAIN

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

USA

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

ICELAND

Marport EHF
Fossaleyni 16
112 Reykjavik, Iceland
supporticeland@marport.com

SOUTH AFRICA

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

UNITED KINGDOM

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

Appendix

Frequency Plan

When the system is installed, you can add sensors to it. 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.

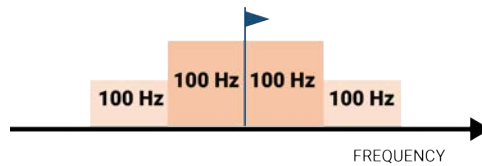


Figure 1: PRP sensors (e.g. Catch sensor, Trawl Speed, Spread sensor...)

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

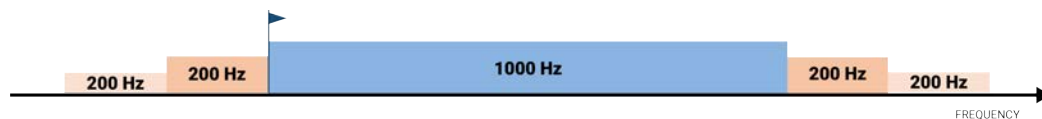


Figure 2: Marport Pro sensors (e.g. Trident, Door Explorer)

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

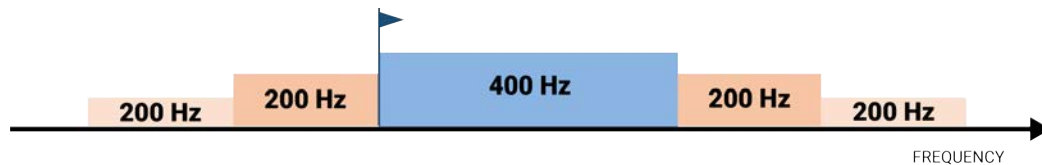


Figure 3: NBTE sensors (e.g. Speed Explorer, Trawl Explorer, Catch Explorer, Door Sounder)

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

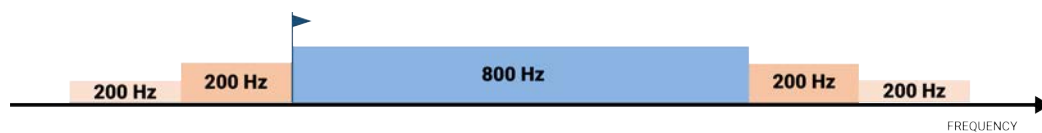


Figure 4: HDTE narrow band mode

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

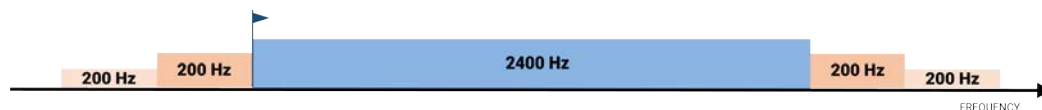


Figure 5: HDTE wide band mode

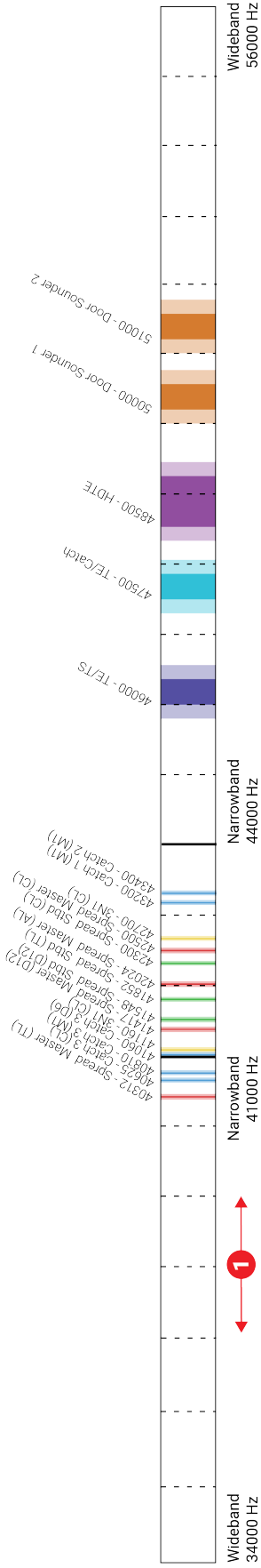
Example: If the frequency of the sensor is 40kHz, there should be no sensors between 39.8-40kHz and 40-42.6kHz.

▶ Frequency of the sensor ■ Bandwidth ■ Mandatory distance with other sensors ■ Recommended distance with other sensors

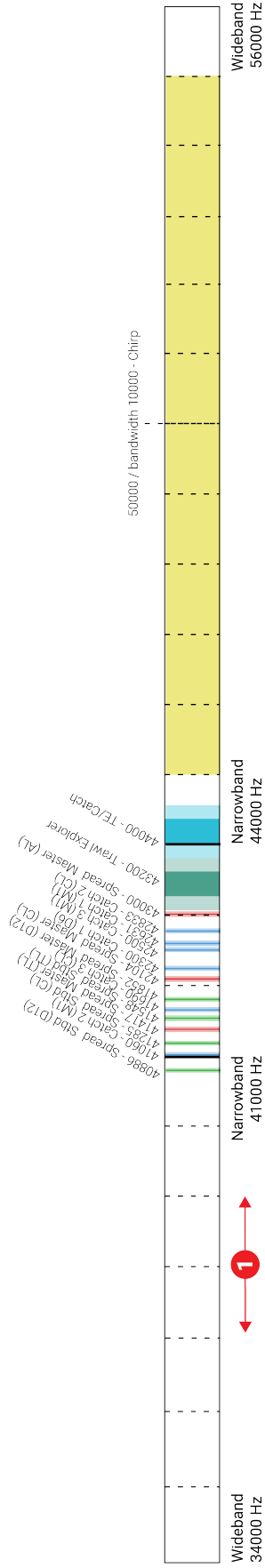
Examples of frequency allocations

- 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.

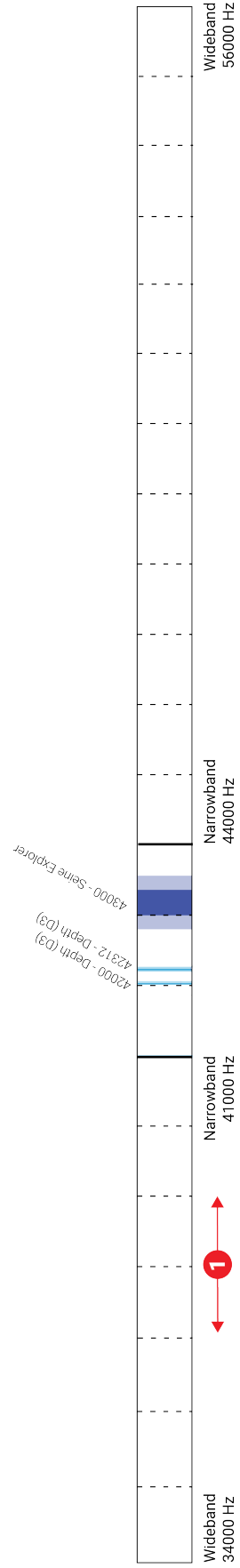
Example of a system with Spread, Catch, Trawl Speed sensors and Speed Explorer, HDTE and Door Sounder.



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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