

MARPORT DOOR SENSORS

QUICK REFERENCE GUIDE

Purpose



Door sensor family includes two types of sensors: Spread Sensor and Door Sounder.

Spread sensors are placed on starboard and port doors and clump in order to monitor the spread of your trawl doors. They communicate with each other via an acoustic link.

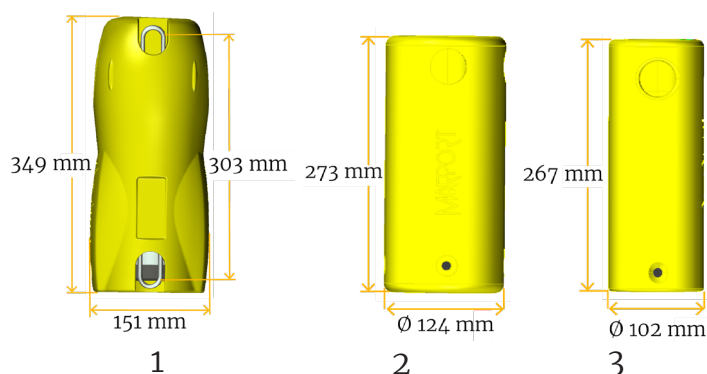
The Master sensor on the port door communicates with the Starboard and Clump sensor, then sends distance data to the vessel. Sensors also monitor pitch and roll, water temperature and depth. This gives you a full picture of each door's performance. For example, you can know if one of the doors falls flat during a tow or if doors are crossing over each other. Spread sensors can be installed on all types of trawling that use doors.

Spread sensors also exist in smaller size to meet the needs of smaller trawlers: a mini Spread Sensor (stubby bottle) with a standard or slim housing.

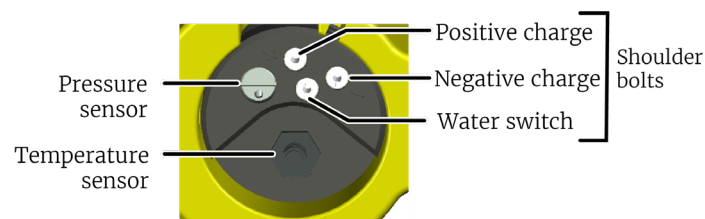
Door Sounder sensor displays an echogram presentation and communicates faster with the vessel through our narrow band protocol. Door Sounder sensors can be installed on both doors. They are here to check that there is a steady distance between the door shoes and seabed. The latest generation are Door Sounders with target strength calibration: sensors are calibrated to all display the same colors for a given target.

Dimensions

Spread sensor (standard) & Door Sounder (1), Mini Spread sensor with standard (2) or slim housing (3).



Main Parts



Caution:

- Do not insert foreign objects into depth sensor opening or try to open it.
- Do not remove the shoulder bolts from the outside of the sensor. It may damage the components.

Firmware

Spread Sensor

- Master sensor: Spread Master firmware
- Starboard & Clump sensors: Spread Slave firmware

See manual for Spread sensor firmware numbers.

	Firmware name	Options
Single trawl	Spread Master/Slave with options and single distance (V1, V2)	• Depth, temp, P&R • Distance port/stbd
	Door Spread PI	Compatible Simrad PI
Twin trawls	Spread Master/Slave with options and dual distance (V1)	• Depth, temp, P&R • Distances port/stbd and port/clump
	Spread Master/Slave with options and dual or triple distance (V2)	• Depth, temp, P&R • Distances port/stbd, port/clump, clump/stbd
	Door Spread PI dual distance	Compatible Simrad PI

Door Sounder

Firmware name	Options	Firmware Number
Door Sounder	• Echogram	FIRM124
Door Sounder with target strength calibration (Bottom Explorer v3)	• Echogram with calibration	FIRM129

Door Sensors Beamwidths

Beamwidths for Uplink pings

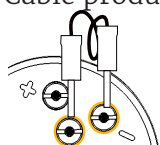
Beamwidth	@ 35 kHz	@ 50 kHz	@ 60 kHz
-3 dB	46°	40°	30°

Beamwidths for Down pings

Beamwidth	@ 125 kHz	@ 165 kHz	@ 200 kHz
-3 dB	26°	24°	22°

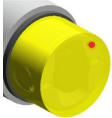
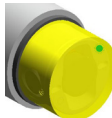
Sensor Configuration

Sensors can be fully configured from the vessel or from the office with Marport Mosa2 configuring tool, using a wireless connection or the Configuration Cable product on any Mac Os device.



Wireless connection: to activate the sensor outside sea water, use a jumper to connect and disconnect the negative charge and water switch.

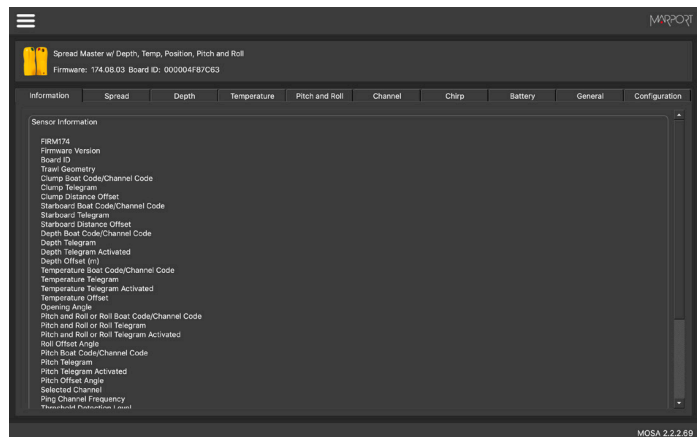
Refer to the LED in the transducer to see the state of the sensor:

State	Situation	Action	LED
Charging	Charger plug is connected.	Batteries are charging.	No light
Running	Sensor is in water or activated with jumper.	After an initialization phase, echo sounder is operating.	Flashing red 
Configuring	Sensor is out of water.	Configuration via wireless connection. Turns off after 10 min. without user action.	Flashing green 



With Mosa2 configuring tool, you can:

- Configure all settings for your sensor
- Export the sensor settings



Note: Only advanced users or Marport technicians should configure the sensor. For further information, refer to door sensor user guide.

System Configuration

Firmware	Mx receiver version	Scala version
Spread Master/ Slave V2	all	all
Spread Master/ Slave V1	all	all
Door sounder (FIRM124)	all	all
Door sounder with target strength calibration (FIRM129)	04.02.28 or later	01.02.05 or later

M! Add your door sensors to the receiver with Marport Scala2 software.

When adding the sensor to the receiver:

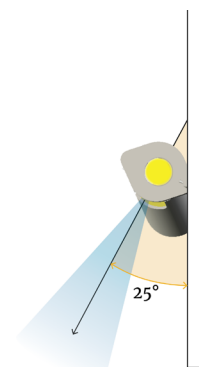
- Make sure that your sensor configuration (Mosa2) and receiver configuration (Scala2) are identical, especially the uplink frequency and telegrams of the sensor.
- Make sure there is enough distance between the sensor frequency and other sensor frequencies.

For further information, refer to door sensor user guide.

Installing

Door Sounder

Install Door Sounder sensors in specifically designed sensor pockets welded to trawl doors. They must have specific angles: the down sounder must have an angle of 25° relative to the door and the sensor must point toward the vessel during operation.

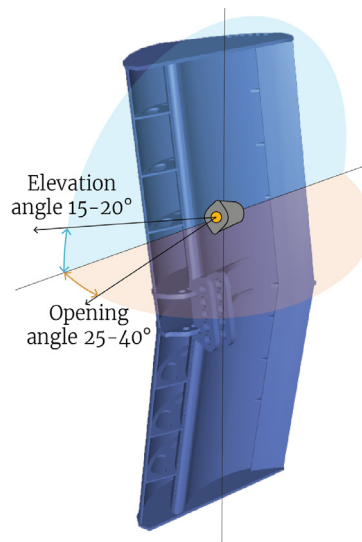


Install Door Sounder sensors inside each door pocket. The transducer (side with marker on housing) must be oriented toward the vessel and the side with the circle/A must point downwards.

Spread Sensor

Install Spread sensors in specifically designed sensor pockets welded to trawl doors. They must have specific angles:

- elevation angle of 15° to 20°
- opening angle of 25° to 40°

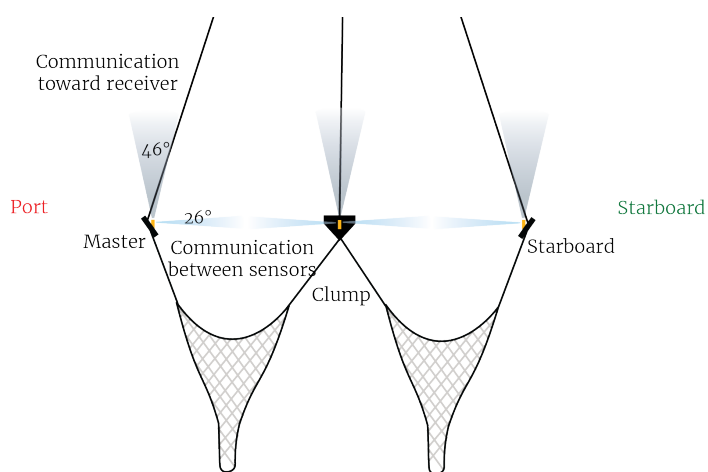


On a single trawl, install the Master Spread Sensor (red marker) on the port door and the Starboard Spread Sensor (green marker) on the Starboard door. The side of the sensor with the circle/A must be oriented toward the opposite door.

On twin trawls, in addition to the Master and Starboard sensors, install a Clump sensor on the clump. The side of the sensor with the circle/A must be oriented toward the port door.

! Make sure that sensors are correctly aligned and that lines of communication between them and toward the vessel are unobstructed. If not, you will have issues receiving data.

! You need to calibrate the pitch and roll of the spread sensors using Mosa2 when they are placed in the sensor pockets.



The beamwidth toward the receiver (uplink ping) is 46° and beamwidth toward the other sensors (down ping) is 26°. This beamwidth is thinner: this is why it is important to keep sensors aligned.

Display

Sensor data such as distance, depth, temperature, pitch and roll is displayed on Scala2 software.

You can customize display types: text, history plot, dial, gauge.

Door sensors have different features to help you monitor the performance of your trawl doors. These features depend on the firmware installed on sensors.

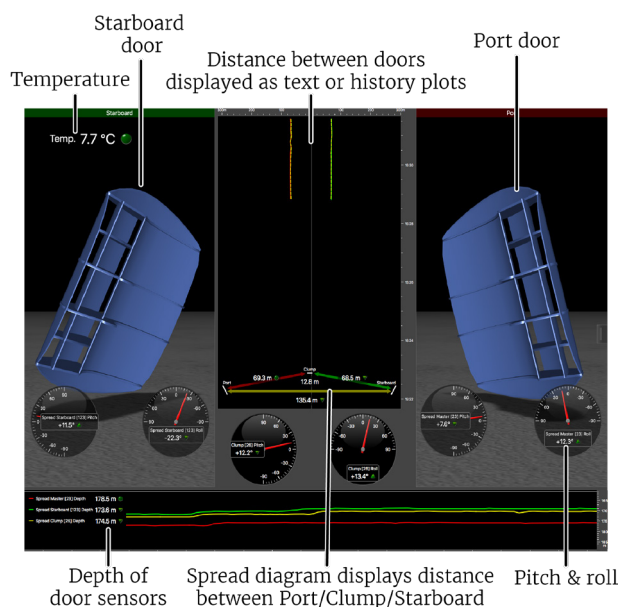
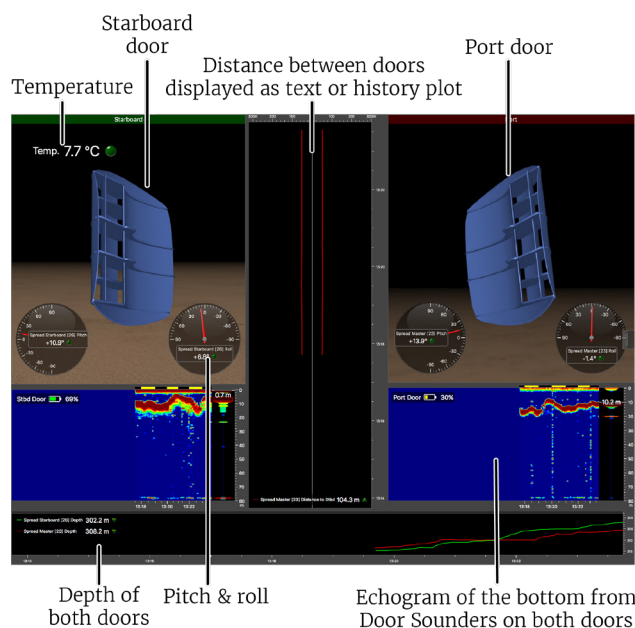
Spread Sensors

- **3D view** of doors
- **Spread distance** between doors: 1 distance Port-Starboard, 2 distances Port-Starboard and Port-Clump, 3 distances Port-Starboard, Port-Clump and Clump-Starboard.
- **Door Pitch and Roll**
- **Depth**
- **Water temperature**

Door Sounder Sensors

- **Echogram images**
- **TVG:** Pings sent by the sensor are attenuated in the water. It means the deeper the target is, the more attenuated signals will be received and sent back. TVG (time variable gain) is here to compensate this effect by using 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. For better target strength values for the bottom, we recommend to set TVG at 20 log.
- **Target strength** (FIRM129 only): is displayed for individual targets on the echogram when you hover over it with the mouse. It helps you identify fish.
- **Autorange** (FIRM129 only): The range of the sounding can adapt automatically to the bottom detected. This enables you to have better echogram image quality when the doors are close to the seabed, because the range will become smaller (the smaller the range, the better the image quality).

Below are examples of data displayed by door sensors.



Sensor Daily Use



The sensor automatically starts when in sea water. It switches to wireless connection mode when out of water. When in wireless mode, the sensor turns off after 10 minutes if there is no user action.

When the sensor is not in operation, verify with the transducer LED that the unit is not in running mode and discharging the batteries.



Rinse the sensor with fresh water between uses, especially the negative, positive charges and water switch (see illustration p.1). You can do it when the sensor is in running mode out of water. Dry the charging bolt afterwards. When not in use, make sure the sensor is dry and stored in a dry area.



The operational life time can be up to 16 days for Spread sensors (8 days for Mini Spread Sensor) and 75 hours for Door Sounder sensors, depending on the power settings.

Sensors have Lithium-Ion batteries. Charge them with Marport Basic Sensor Charger or Multi-Charger. Avoid full discharges and charge the battery whenever possible, at any battery level.

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Maintenance

External

- Check that all attachment equipment are not worn or torn. Replace when appropriate.
- Make sure that the sensor is clean. Remove debris with a piece of wood or screwdriver. Wash away mud or debris with warm water but do not use highly abrasive materials.

⚠ Be careful with sensors. Sensors and components are sensitive to mechanical shocks and contamination.

Internal

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

Dealers, please refer to door sensor service manual for more detailed maintenance instructions.

Marport recommends you to return sensors to an approved Marport dealer every 2 years for maintenance.

⚠ To ensure proper and safe use of this equipment, carefully read and follow the instructions in the door sensor user guide.