



**OCEAN** SONICS

# Ocean Sonics Processing Buoy User Guide



April 2020

Version 1.1

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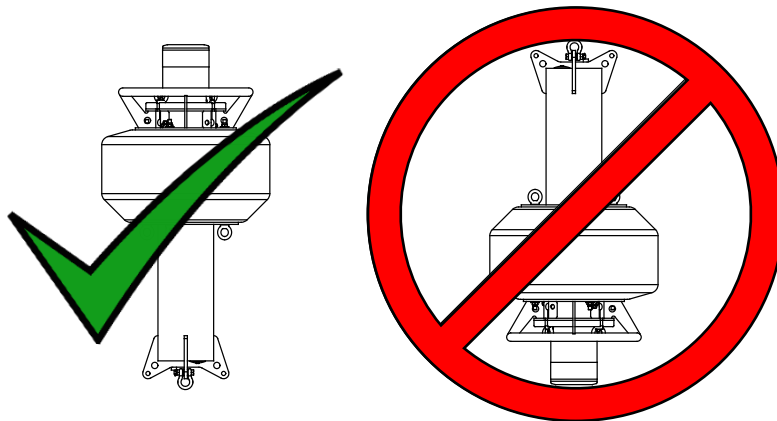
## Introduction

The Ocean Sonics Processing Buoy is an easy way to deploy one or more iCListen Smart Hydrophones while keeping them synchronized. Users can create a custom array using the extension cables and Smart Cables as building blocks. The setup and configuration of the hydrophones can be done with the buoy's internal access point. The Processing Buoy allows users the ability to customize their buoy and add features based on their deployment.

The yellow drifting buoy is small and lightweight, so it can be deployed from a small vessel. This solution combines power and processing with a hydrophone array.

## Important Notes

- Buoy battery life will depend on set-up of deployment, number of hydrophones and smart cables.
- To confirm the battery voltage, see [Appendix A](#).
- Turn the buoy **OFF** when not in use.
- Recharge batteries after each 6 to 8-hour deployment.
- Store the buoy upright or laying on side.
- Do NOT flip the buoy or turn upside down.



- Battery positioning is ballasted for upright position.
- Turning the buoy upside down could result in damage to batteries.

## Specifications

<b>WEIGHT</b>	25 kg in air
<b>DIMENSIONS</b>	1 m x 0.5 m

## Buoy Power

The buoy power is provided by sealed lead acid batteries inside the buoy. The batteries can be recharged using the battery charger provided with the buoy. Please read all instructions in this guide and in the battery charger manual (see USB drive) prior to charging batteries.

Notes	
1.	The manual for the battery charger is in the charger box and should be read prior to charging the buoy.
2.	The buoy should be charged in the <b>OFF (0)</b> position. The charger should be disconnected prior to turning the switch to the <b>ON (1)</b> position.

## Power Switch

The external switch has two positions.

0	<b>OFF and CHARGE</b> position	All internal electronics are turned off and downstream power at the MCBH is turned off. When the supplied battery charger is plugged in, it will automatically charge the batteries.
1	<b>ON</b> position	All internal electronics are turned on and downstream power is present at the MCBH. <b>The charger should be disconnected prior to turning the buoy on.</b>

## Charging the Buoy

1. Switch the buoy to the 0 (OFF/CHARGE) position.
2. Ensure the buoy is in a secure, dry location for charging.
3. Place the buoy on its side with MCBH8 plug in accessible position.  
(Do **NOT** turn upside down or flip buoy onto top hat.)
4. Insert power cord into wall plug (120VAC power source).
5. Mate connector and secure locking sleeve (see below).

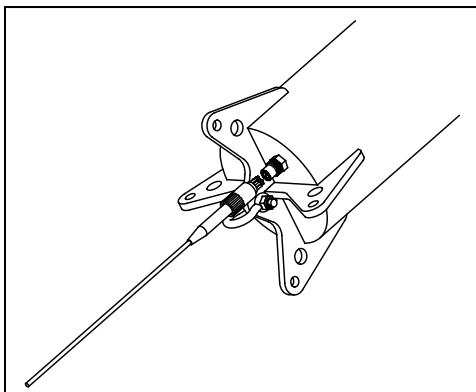


Figure 1. Power Adapter connecting to Buoy.

6. The charge cycle should be displayed by the LED battery on the charger.

Battery Charger Indication Light		
●	Red Light	Charging
●	Green Light	Charge Complete, Float

Please see the Charger Manual for more information (located on the USB drive).

7. Charging should take approximately 8-10 hours per buoy.
8. To Check Battery Voltage, see Appendix D.
9. Charge time will vary depending on discharge state of batteries.

### Charging Precautions

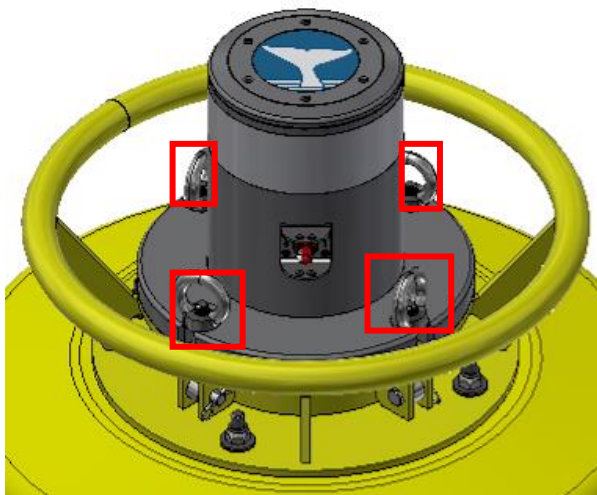
- Operate in an environment with proper ventilation.
- Do not operate charger in a damp or wet environment.
- Charger is fully automatic and can be left on the battery indefinitely.
- Refer to Operation Manual included with charger.
- Batteries should be stored fully charged between 15°C to 20°C.
- Batteries should be charged every 6 months or when open circuit battery voltage drops to 12.0 VDC.

## Buoy Communication

### Opening the Top Hat

Notes	
1.	When the electronics enclosure (top hat) is opened by the user to access the CuBox, extreme care should be taken to ensure there is no damage to cables or electronics. Opening the top hat should only be done in a clean and dry environment.
2.	Inside the electronics enclosure is a low voltage disconnect (LVD) module that is factory set at 22.4V. This setting <b>should not</b> be altered by the user and altering this cut-off will void warranty on the buoy.

1. Place the buoy on its side.
2. Remove any chain or rope tied in the eye hooks.
3. Unscrew eye bolts holding top hat in place.



4. Unscrew 6 Phillips screws to access the electronics.
5. Slowly lift the top hat and place on a flat surface while accessing inside of the end cap.
6. CuBox ports can be accessed from this position or the CuBox can be removed from the Velcro strap and connectors for programming.
  - a. The 5V power adapter can be used to power the CuBox outside of the buoy.

### Development on the CuBox

The development package can be accessed on the USB drive included with buoys.

The archive can be extracted and read, starting at `readme_top.txt`.

All the sub-folders in the archive should have their own readme file associated.

The package can also be accessed online by contacting [daniel.kehslar@oceansonics.com](mailto:daniel.kehslar@oceansonics.com) or [support@oceansonics.com](mailto:support@oceansonics.com).

## Deployment Guide



**OSL Tip:** For a quick setup install **Ocean Sonics'** Software Programs [Marco](#) and [Lucy](#) on your PC prior to setting up your **Ocean Sonics Buoy**.

### Connect to Ocean Sonics Buoy

1. Use a connector to communicate to internal computer in the buoy hardhat.
2. Setup Processing for deployment. (See Buoy Communication for more detail).
3. Ensure all configurations are setup before returning hardhat for deployment.

### Assemble Buoy Configuration

4. Ensure the buoy is fully charged and in the OFF position (OFF Position: **0**).

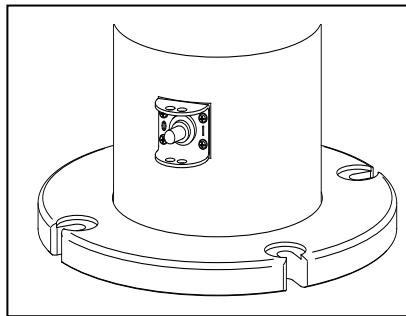


Figure 2. Top Hat of Buoy, Off (0) Position

5. Attach cables, smart cables and hydrophones in configuration for deployment. It is recommended to use a cable and padlock to secure eye hooks, so they do not unscrew during the deployment.
6. Turn on Ocean Sonics Buoy (ON Position: **1**).

### Setup Hydrophone

7. Setup hydrophone sampling for deployment.

### Deploy Buoy into the Water

#### Note

**For safe deployment ensure the vessel engine is stopped during deployment.**

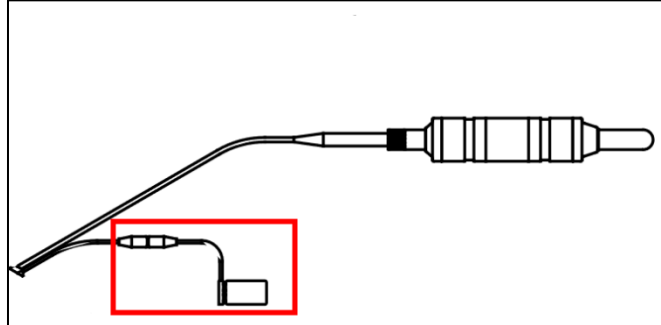
1. Start deployment with bottom of array cables.
  - a. Lower the bottom weight on end of cables into water.
  - b. Slowly feed in the hydrophones and cables of the array.  
**Special care should be taken with the heave plates and hydrophones.**
  - c. The Buoy should be the last instrument lowered to the water.

## Recovery

### Note

The recovery requires 2-3 individuals. It is best to have 1-2 people retrieving the equipment from the water while another person is laying the equipment out on the deck as it is retrieved taking care of fragile hydrophones and minimizing tangling of the array.

1. Transit to buoy.
2. Use gaff hook to secure buoy.
3. Tie a rope around the top ring to secure buoy.
4. Retrieve the buoy from the water.
  - a. Place the buoy on deck while holding onto the rope attached to the cabled array below.  
A winch can be used to allow easier retrieval of buoy on deck.
  - b. Slowly pull out the heave plate and recover the remaining array by hand, with special care handling hydrophones.
5. Turn off Ocean Sonics Buoy (OFF Position: **0**).
6. Turn off recording on all hydrophones using a test cable and a PC.
7. Hydrophones can be **Powered Down** to retain battery at 100%.  
For each hydrophone:
  - a. Attach test cable.
  - b. Insert reset tool to power down.



8. Rinse the Buoy, hydrophones and equipment with fresh water.

## Maintenance

- The buoy should be thoroughly rinsed with fresh water after each deployment to remove saltwater and debris.
- The buoy should only be opened when it is safe to do so in a clean environment without chance of water entering the inside.
- The buoy should be recharged after each deployment.
- Batteries should be charged every 6 months or when open circuit battery voltage drops to 12.0 VDC.



## Battery Information

<b>OCEAN SONICS PART NUMBER</b>	11662
<b>TYPE</b>	RECHARGEABLE, SEALED LEAD ACID
<b>NOMINAL VOLTAGE</b>	12.0 V
<b>NOMINAL CAPACITY</b>	10Ah

## Battery Charger Information

Model: JAC0224-C

More information on the charger can be found on the Charger Manual in the charger box and a copy is also on the USB drive provided with the buoy.

## Contact Ocean Sonics Ltd.

To download Ocean Sonics Software please visit:

<https://sites.google.com/a/oceansonics.com/ocean-sonics-resource-site/>

### Service

To request an RMA or technical support

Email: [support@oceansonics.com](mailto:support@oceansonics.com)

Phone: 1-902-655-3000

### Sales

For general sales inquiries

Email: [sales@oceansonics.com](mailto:sales@oceansonics.com)

Phone: 1-902-655-3000

### Website

<https://OceanSonics.com>

### Mailing and Shipping Address

Ocean Sonics

110 Parkway Dr.

Truro Heights, NS Canada

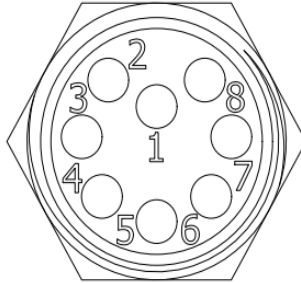
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## Appendix A

### Confirming Voltages

A voltmeter can be used to confirm the proper voltage is being supplied to the array on the buoy.

1. Place the negative voltmeter lead (black) into pin 1 of the MCBH8F bulkhead connector on the battery pack end cap for the common connection (pinout below).
2. Place the positive voltmeter lead (red) into pin 7 (pinout below).



**MCBH8F Bulkhead Connector Pinout**

**Fully Charged Batteries should measure approximately ~25 V.**

**Batteries should not be discharged past 21 V.**

# Appendix B

## Technical Drawing

PIN	SIGNAL
1	DC RTN
2	GND
3	TX-
4	TX+
5	RX-
6	RX+
7	DC PWR
8	SYNC

**UNLESS OTHERWISE NOTED:**

1. DIMS IN MILLIMETRES
2. X ± 0.75
3. X.X ± 0.25
4. X.XX ± 0.10
5. ANGLES ± 10'
6. HOLE SIZES ± 0.075 MAX
7. FLATNESS 0.075 T.I.R.
8. SURFACE FINISH: 125

**NOTES:**

1. CONNECTOR: SUBCONN ICBH-8M
2. MATERIAL: FULLY ALUMINIUM
3. MATERIAL: FLOAT COLLAR: IONOMER FOAM
4. RESERVE BUOYANCY: 25 Kg
5. NOMINAL BATTERY VOLTAGE: 24.0
6. NOMINAL BATTERY CAPACITY: 10 Ah

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**Ocean Sonics Limited**  
NOVA SCOTIA, CANADA  
WWW.OCEANSONICS.COM

**PROCESSOR BUOY**

SIZE	DRAWING NUMBER	REV	SCALE	SHEET
A	PUB-BOS-PRO	A	1:1	1 OF 1