



**OCEAN** SONICS

# 100 Wh Subsea Power Bank User Guide



Model: BR2-B2

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## Overview

The 100 Wh Subsea Power Bank provides a rechargeable underwater power solution for longer deployments of icListen hydrophones, or other instruments. Previously, autonomous deployments of the icListen were limited by the 8-hour capacity of the internal battery. The 100 Wh Subsea Power Bank can extend deployment duration up to 2 days. The Subsea Power Bank gives users a low cost, compact, and easy to deploy option to integrate with their hydrophone system.

## Product & Accessories

- Subsea Power Bank
- Test Cable
- 30 V Power Adapter (1.2 A, 36 W)
- Power Cord
- Dummy Plug
- Molykote Lubricant

## Specifications

<b>WEIGHT</b>	1.4 kg (in air)
<b>DIMENSIONS</b>	Length: 202.7 cm Diameter: 82.3 cm
<b>DEPTH RATING</b>	200 meters
<b>CHARGE TIME</b>	8 hours to Full Charge
<b>NOMINAL VOLTAGE</b>	22.2 V

## Features

<ul style="list-style-type: none"><li>• Maximum Continuous Discharge Current of 1.5 A</li></ul>
<ul style="list-style-type: none"><li>• Charging and Error Indicator LED</li></ul>
<ul style="list-style-type: none"><li>• Protection Circuitry</li></ul>
<ul style="list-style-type: none"><li>• Permissible to be shipped by air (100 Wh or less)</li></ul>

## Deployment

Prior to the deployment, ensure both the Power Bank and icListen are fully charged, and the icListen memory is cleared to ensure the memory card will not fill prematurely.

1. Configure the hydrophone settings for deployment using test cable and PC (see icListen User Guide).
  - a. Enable the Wake Delay function
    - i. on the web browser under Settings > Special Features.
  - b. Unplug the power barrel from the test cable.
  - c. Put the hydrophone into Standby Mode.

- i. On the web browser under Operation > Standby/Reset.
  - ii. The hydrophone will buzz 3 times to indicate it is in standby (low power) mode.
2. Disconnect the icListen from the test cable.
  - a. The hydrophone is now configured, fully charged, powered down, and ready for deployment.
3. Apply *Molykote Lubricant* to the **female** connector of the *Power Bank*, *Extension Cable*, and *Dummy Plug*.
  - a. See <https://www.macartney.com/what-we-offer/support/subconn-handling-instructions/> for lubricant application instructions.
4. Plug the *Dummy Plug* into the **male** connector of the *Power Bank*.

**NOTE: Do NOT use a shorted plug on the male header. Using a shorted plug will cause damage to your Power Bank.**
5. Connect the *Extension Cable* to the **female** connector of the *Power Bank* and tighten the locking sleeve.
  - a. The unconnected **female** end of the *Extension Cable* will supply power and turn on the hydrophone once connected. Wait until you are ready to deploy before making this connection.
6. Connect the icListen to the *Extension Cable*.
  - a. You should feel the correct 1 buzz and 2 buzz bootup sequence if the hydrophone was placed into standby correctly.
7. The equipment is ready to deploy.

## Retrieval and Storage

1. Rinse the equipment with fresh water and dry.
2. Disconnect the icListen from the Power Bank.
  - a. Hydrophones should be **Powered Down** after being removed from the water.
    - i. Attach the test cable to the hydrophone.
    - ii. Turn off hydrophone recording.
    - iii. Insert and then remove the **hardware reset tool** (9V battery) plug into the barrel connector of the test cable.
3. Store the cleaned and dried equipment away from vibrations and extreme temperature changes.

## Charging

1. Remove any instrument connected to the **female** connector on the *Power Bank*.
  - a. If a hydrophone or other instrument is left connected to **female** connector on the *Subsea Power Bank*, charge time will increase.
2. Apply the *Molykote Lubricant* to the **female** connector of the *Test Cable*.
  - a. See <https://www.macartney.com/what-we-offer/support/subconn-handling-instructions/> for lubricant application instructions.
3. Connect the *Test Cable* to the **male** connector on the *Power Bank*.
4. Connect the *Power Cord* to the *Power Adapter* to create the *Power Supply*.
  - a. **Disclaimer: Only use the correct 30 V / 36 W Power Supply provided by Ocean Sonics Ltd.**
5. Plug the *Power Supply* into an electrical socket.
6. Plug the *Power Supply* into the barrel jack of the *Test Cable*
7. The LED should briefly flash **red** before flashing **green** at 1 s intervals.
  - a. Lithium batteries have a narrow temperature range that is recommended when charging. For improved longevity of your *Subsea Power Bank* charge in a cool area.
8. When the *Subsea Power Bank* is fully charged the LED should be solid **green**.

## LED Indicators

LED	Meaning
Solid <b>Green</b>	Charge complete
Flashing <b>Green</b> (1 s)	Power bank Charging
Flashing <b>Red</b> (0.25 s)	Error (see Error Signals and Troubleshooting)

## icListen Hydrophone Synchronization and Ethernet

The icListen hydrophone synchronization and ethernet signals remain functional as they pass through the Power Bank. These signals require more power so deployment duration may be reduced.

## Error Signals and Troubleshooting

The flashing **red** LED is a general error indicator which could be triggered by several different circumstances. Please follow these troubleshooting steps when the LED indicator is flashing **red**:

1. Ensure the *Power Adapter* and *Power Cord* are the exact ones provided by Ocean Sonics Ltd.

2. Disconnect the *Power Adapter* from the *Power Bank*, wait 10 seconds, reconnect the *Power Adapter*.
3. Disconnect instruments when attempting to charge the *Power Bank*.
4. Ensure the instrument load is not too large. The maximum continuous discharge current is 1.5 A.
5. Ensure the ambient temperature around the *Power Bank* is between 5°C and 35°C.

Contact Ocean Sonics Ltd. if the troubleshooting steps above do not resolve the problem. The *Power Bank* may need to be returned to Ocean Sonics Ltd. for servicing.

## Long Term Storage

Ocean Sonics recommends following the guidelines below for optimal battery longevity when storing the Power Bank long term.

- Ideal storage temperature: 0 to 35 °C.
- Keep the Power Bank away from extreme temperature changes and vibration.
- Do not store when battery is fully depleted (<5% charge).
- For long term storage the battery charge state should be around 40 percent.
- Every 6 months the Power Bank should be removed from storage and recharged (instructions below).

To achieve the 40% battery state please follow the instructions below:

1. Fully charge the *Power Bank* to 100%.
2. Measure the battery voltage, approximately 25.0 – 25.2 V, by probing pin 1 and pin 7 with a Multimeter (See: [Appendix A Battery Measurements](#) for instructions).
3. Discharge the battery to approximately 21 – 22 V, this will correspond to a 40% battery state.
  - a. Starting with a fully charged *Power Bank* and *icListen*. Discharging the battery into the hydrophone for approximately 30 hours will discharge the battery about 60%.
4. Store the battery for up to 6 months.
5. Every 6 months, the battery should be brought out of storage, recharged to 100%, and then discharged back to 40 %. This will keep the battery in optimal condition for storage periods longer than 6 months.

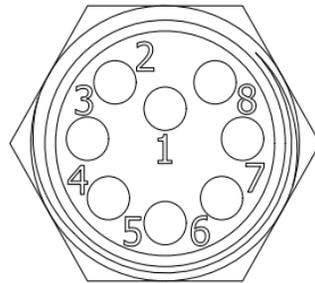
## Appendix A

### Battery Measurements

A voltmeter can be used to confirm the proper voltage is being supplied to the exterior bulkhead connector.

This should be done before a deployment and after replacing batteries to ensure the batteries are in good condition and fully charged.

1. Unplug the charger and put dummy plug on male connector.
2. 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).
3. Place the positive voltmeter lead (red) into pin 7 (pinout below).



**MCBH8F Bulkhead Connector Pinout**

When batteries are fully charged the measurement should be ~25.0 - 25.2 V.

# Appendix B

## Technical Drawing

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

BATTERY DATA	
BATTERY TYPE	LHON(18650)
CAPACITY (Wh)	100
OUTPUT VOLTAGE (V)	18.0 - 25.2
RATED CURRENT (A)	1.5 MAX
CHARGING CURRENT (A)	1.2 MAX
CHARGING VOLTAGE (V)	30.0

CHARGE INDICATOR	
STATE	CONDITION
FLASHING GREEN	CHARGING
SOLID GREEN	CHARGE COMPLETE
FLASHING RED	FAULT

**UNLESS OTHERWISE NOTED:**

- DIMS IN MILLIMETRES
- XXX ± 0.25
- XX ± 0.25
- XX ± 0.25
- XXX ± 0.25
- ECCENTRICITY 0.075 MAX
- FLATNESS 0.075 T.D.R.
- SURFACE FINISH: Ra

**NOTES:**

- CONNECTORS: SUBCONN MCBH-5S
- CASE MATERIAL: POM
- MAX. WORKING DEPTH: 200 m
- MASS: 1.4 kg
- WEIGHT IN SEAWATER: 240 g

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