

# Battery Pack

**BPA50B  
BPA50-IM**

## User's Guide

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## Battery Pack 50 Warranty

The battery pressure housing is guaranteed against defects in materials and workmanship for one year from the original date of purchase. Warranty is void if the factory determines the unit was subjected to abuse or neglect beyond the normal wear and tear of field deployment.

To return the instrument, contact WET Labs for a Return Merchandise Authorization (RMA) and ship in the original container. WET Labs is not responsible for damage to instruments during the return shipment to the factory. WET Labs will supply all replacement parts and labor and pay for return via 3<sup>rd</sup> day air shipping in honoring this warranty.

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## Return Policy for Units with Anti-fouling Treatment

WET Labs cannot accept instruments for servicing or repair that are treated with anti-fouling compound(s). This includes but is not limited to tri-butyl tin (TBT), marine anti-fouling paint, ablative coatings, etc.

Please ensure any anti-fouling treatment has been removed prior to returning instruments to WET Labs for service or repair.

*We recommend our **Anti-fouling Paint Kit** for optimum bio-fouling protection. It includes Ecominder<sup>®</sup> anti-fouling paint, tape, brush, and detailed instructions. Ecominder<sup>®</sup> is specially formulated as a safe, effective alternative to traditional copper-based anti-fouling paints. Simply wrap your instrument package with the supplied tape, then paint the tape with Ecominder<sup>®</sup>. After deployment, remove the anti-fouling paint by simply peeling off the tape. Each kit contains more than enough material for two deployments.*

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## Shipping Requirements for Returning Instruments

1. Please retain the original shipping material. The shipping container meets stringent shipping and insurance requirements.
  2. To avoid additional repackaging charges, use the original box (or WET Labs-approved container) with its custom-cut packing foam and anti-static bag to return the instrument. If using alternative container, use at least 2 in. of foam or bubble-wrap to fully surround the instrument.
  3. Clearly mark the RMA number on the outside of your shipping container and on all packing lists.
  4. Return instruments using 3<sup>rd</sup> day air shipping or better: do **not** ship via ground.
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## 1. Battery Pack Description

The BPA50B and BPA50-IM are non-rechargeable battery packs that provide a maximum of 50 Amp hours (Ah) using alkaline batteries. They have two bulkhead connectors, a pressure relief plug, and an end flange handle.

The BPA50B provides power to attached instruments while providing a communications path between the instrument and an external host PC.

The BPA50-IM provides switched/non-switched power to attached instruments while providing access to an internally mounted Seabird Inductive Modem Module (IMM). When used with an Inductive Cable Coupler, the BPA50-IM enables an attached instrument to be accessed via a Seabird Inductive Mooring.

### **Important!**

Anyone using a BPA50-IM should become thoroughly familiar with the IMM User's Guide before using the Battery Pack.

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The BPA50-IM has a power switch (See Section 4.0) that can be used to leave the attached instrument either always powered or turned on only when the IMM is accessed by a remote IMM on an inductive mooring.

Battery packs have a **self-resetting polyswitch circuit breaker** to protect connected instruments and the batteries from a possible short. This circuit breaker senses high current draw: when its threshold of 3 amps is met or a short circuit condition occurs, it almost instantly opens the circuit. This state is retained until the fault condition is removed, at which time the breaker resets and closes the circuit.

### **Important!**

While the BPA50's polyswitch is rated at 3 amps, the average current draw should be limited to 2.5 amps.

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## 2. Specifications

<i>Dimensions:</i>	56.4 x 11.4 cm
<i>Weight in air:</i>	8.6 kg
<i>Weight in water:</i>	2.9 kg
<i>Rated depth:</i>	200 m
<i>Voltage output:</i>	15 VDC nominal (16V peak)
<i>Battery type:</i>	Alkaline
<i>Number of cells:</i>	40
<i>Total capacity:</i>	50 Ah* (See section 3 for capacity discussion)
<i>Circuit protection:</i>	3 Amp polyswitch (should be operated below 2.5 A average)
<i>Housing:</i>	PVC with acetal end flange

*\* The battery cell manufacturer's specifications are about 40% higher. Note that actual performance depends on rate of discharge, temperature, and the minimum voltage requirements of your instrument(s). WET Labs recommends the more conservative 50 AH specification, or even less under high current loads or cold temperatures. See section 3.*

### 2.1 Battery Pack Connectors and Cabling

#### 2.1.1 BPA50B

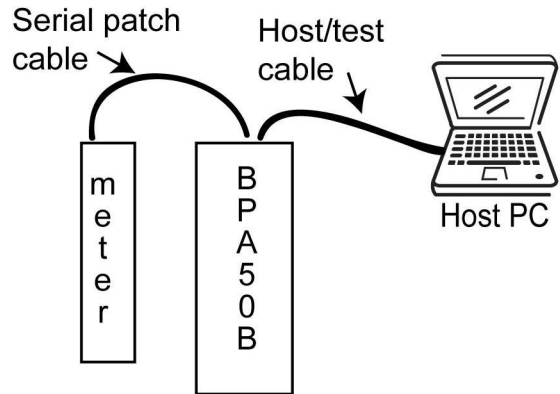
4-Socket Power and Serial Bulkhead Connector

Socket	Function	Diagram
1	GND	
2	V+	
3	RS-232 RX	
4	RS-232TX	

6-Pin Serial Pass-through (host cable) Bulkhead Connector

Pin	Function	Diagram
1	GND	
2	RS-232 RX	
3	N/C	
4	N/C	
5	RS-232 TX	
6	N/C	

The BPA50B uses a standard 1 meter 4-pin to 6-pin serial patch cable (sold separately) to connect the battery pack's 4 socket power/serial port to most WET Labs serial interface instruments that have a 6-pin connector.



When an instrument is connected to the 4-socket port on a BPA50B, the second connector can be used to provide a “direct” connection between the PC COM port and the instrument using a standard WET Labs 6-socket host cable. Note that the BPA50B battery pack has no serial communications capability of its own, but does provide a bi-directional communications pass-thru between a PC and the serial instrument while providing power to the attached instrument.

### **Caution!**

The power connection from the host cable DOES NOT pass through to the other bulkhead connector, so any power used by the instrument(s) is coming from the battery. This can seriously deplete the battery during long “bench” tests.

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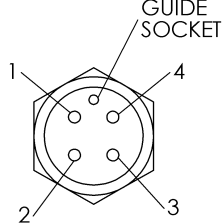
### **WARNING!**

**Except when a host cable is in use, keep the 6-socket “dummy” plug on the BPA50 during deployment to prevent serious corrosion.**

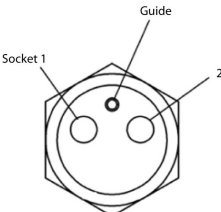
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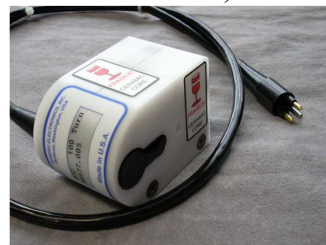
## 2.1.2 BPA50-IM

### 4-Socket Power and Serial Bulkhead Connector

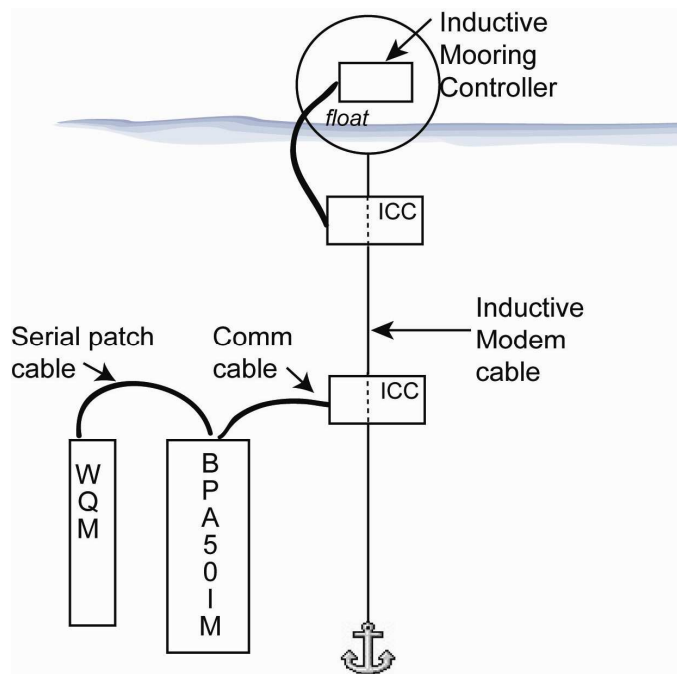
Socket	Function	Diagram
1	GND	
2	V+	
3	RS-232 RX	
4	RS-232TX	

### 2-Socket Pass-through Bulkhead Connector (ICC shown below).

Socket	Function	Diagram
1	IM coil (+)	
2	IM coil (-)	



The BPA50-IM uses a standard 1 meter 4-pin to 6-socket patch cable (sold separately) to connect the battery pack's 4-socket power and serial port to most WET Labs serial interface instruments that have a 6-pin connector.



The 2-socket bulkhead connector is used to attach the ICC to an Inductive Mooring Cable. This provides bi-directional communication between the meter and Inductive Mooring Controller that is also attached to the Inductive Mooring Cable with its own IMM and ICC.

## 3. BPA50 Use and Capacity

The BPA50 provides operational time that is partially dependent upon temperature and rate of current draw. With a typical 250mA load we expect approximately the following capacity:

- 4–6 deg C: 28–30 AH
- 10–14 deg C: 44–48 AH
- 16 + deg C: 50 AH or better

### Notes

When powering instruments that “sleep,” thus using an intermittent current draw, the BPA50 may last longer.

**Higher current draw (approaching or above 1A) may reduce battery life by as much as half.**

Before connecting the battery pack to a piece of equipment, make sure the polarity is correct. Also verify that the battery pack’s output voltage is correct for use with the specific instrument/equipment.

Under normal circumstances, alkaline batteries will not leak and therefore need not be stored upright.

### WARNING!

**MAKE SURE the pressure relief plug and any “dummy” plugs required to cover open connectors ARE FULLY SEATED BEFORE DEPLOYMENT.**

#### 3.1 Checking Functionality

If equipment connected to the battery pack fails to operate, check that it’s properly connected and turned on.

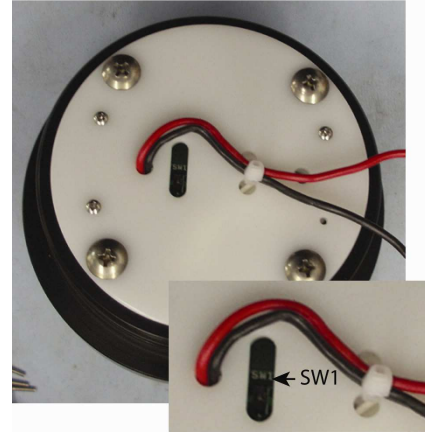
If it appears the battery pack is not functioning, disconnect equipment and check the voltage at the battery pack.

- If it’s below 12 V, the battery core is near exhaustion and a replacement should be ordered. To order a replacement battery core from WET Labs, refer to P/N FAA-000934.

If it’s 0 V, remove the end flange and check wiring continuity. Refer to the instructions for replacing the battery core for important details about removing/replacing the end flange.

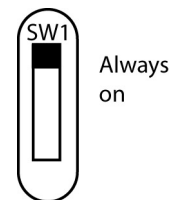
## 4. BPA50-IM Power Switch

The Inductive Modem Module installed in the battery pack has two power switch settings. They are set by a dip switch SW1, which is accessed through the slot in the plastic cover on the bottom of the end flange.

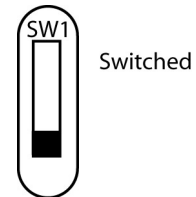


The settings are:

1. Always on—the dip switch is set towards the SW1 label on the circuit board.



2. Switched—the dip switch is set in the downward position. Power from the battery pack is applied to the instrument when the IMM is activated and the IM flag is set.



In both modes, the IMM draws 26  $\mu$ A sleep current from its batteries, which will result in an approximate use of 0.2 AH per year.

Unless otherwise noted in the shipping documentation, the IMM will be programmed for use with a WQM. See the WQM Programmer's Guide for details.

## Revision History

<b>Revision</b>	<b>Date</b>	<b>Revision Description</b>	<b>Originator</b>
A	12/20/07	New document (DCR 554)	A. Derr, M. Everett, H. Van Zee
B	6/4/04	Revise bulkhead connector, change existing (DCR 598)	M. Everett
C	08/20/08	Update connector info/warnings (DCR 613)	M. Everett
D	1/6/09	Update capacity information (DCR 641 )	M. Everett
E	1/21/09	Add IM information (DCR 646)	D. Romanko
F	8/11/09	Change dimension (DCR 679)	H. Van Zee