SEA-BIRD SCIENTIFIC

User manual

Aluminum Battery Pack

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425-643-9866
seabird.com

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Section 1 Safety information

Please read this entire manual before this equipment is unpacked, set up, or operated. Pay attention to all danger, warning, and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

⚠DANGER

Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING

Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION

Indicates a potentially hazardous situation that may result in minor or moderate injury.

NOTICE

Indicates a situation which, if not avoided, may cause damage to equipment. Information that requires special emphasis.

1.1 Hazard information

⚠WARNING

Explosion hazard. If the batteries are not installed correctly, explosive gases can be released. Make sure that the batteries are of the same approved chemical type and are inserted in the correct orientation.

NOTICE

The manufacturer is not responsible for any damages due to misapplication of misuse of this product including, without limitation, direct, incidental and consequential damages, and disclaims such damages to the full extent permitted under applicable law. The user is solely responsible to identify critical application risks and install appropriate mechanisms to protect process during a possible equipment malfunction.

1.2 Equipment labels

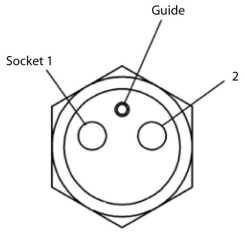
Read all labels and tags attached to the equipment. Personal injury or damage to the equipment could occur if not observed. A symbol on the equipment is referenced in the manual with a precautionary statement.

	Electrical equipment marked with this symbol may not be disposed of in European domestic or public disposal systems. Return old or end-of-life equipment to the manufacturer at no charge to the user.

	EFUP: Hazardous material exists over the threshold of GB/T 26572.2011. The number in the center of the symbol is the Environmentally Friendly Use Period as specified by SJ/T 11364-2014, China's marking for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products. This product should be recycled after its environmentally friendly use period.

Section 2 Specifications

Total capacity	102 Ah		51 Ah	
Dimensions	11.3 x 79.8 cm		11.3 x 49.3 cm	
Weight in air, water	14.7, 7.3 kg		8.5, 3.0 kg	
Depth rating	500 m (plastic end flange); 1000 m (aluminum end flange)			
Voltage output	13.5 VDC	15 VDC	13.5 VDC	15 VDC
Battery type	LR20XWA/BB Alkaline			
Number of cells	54	60	27	30
Circuit protection	4 A fast blow fuse			
	6 parallel sets 1.2 A slow blow fuse		3 parallel sets 1.2 A slow blow fuse	
Pressure housing	Aluminum			
Temperature range	0–35 °C			

Contact	**Function**	**MCBH2-FS**
1	Power	
2	Ground	

Section 3 Operation and maintenance

3.1 Verify operation

⚠WARNING

If the user thinks that the alkaline batteries have leaks, pressure may have built up inside of the pressure housing. Follow ESD protocols to release internal pressure. Put on safety glasses and protective gloves and make sure that the sensor is pointed away from the body and other people. In a well ventilated very SLOWLY loosen the bulkhead connector to release the pressure. Keep away from heat, sparks, flame, and other sources of ignition. Do not smoke.

⚠CAUTION

The pressure housing contains Electrostatic Discharge (ESD) sensitive parts and assemblies that are susceptible to damage from ESD. Follow ESD protocols:

- Put on protective eye wear before you open the pressure housing.
- Any electrostatic charge on the body of the human operator must be released before the pressure housing is opened: put a hand on a grounded surface, or better, wear a grounded antistatic wrist strap.
- At a minimum, wear short-sleeved antistatic clothing, such as cotton, or better, wear an antistatic smock for this service activity. *Do not wear a sweater, fleece or polyester-based clothing.*
- At a minimum, use a workstation with a wood or metal tabletop, or better, a tabletop that dissipates static. *Do not use a workstation with a synthetic or polymeric-based tabletop.*

Attach all cables to the system to be deployed and make sure that the battery supplies sufficient power.

- Voltage for the 15 V pack should be between 15 and 17.5 VDC.
- Voltage for the 13.5 V pack should be between 13.5 and 16 VDC.

3.2 Remove and replace end flange and batteries

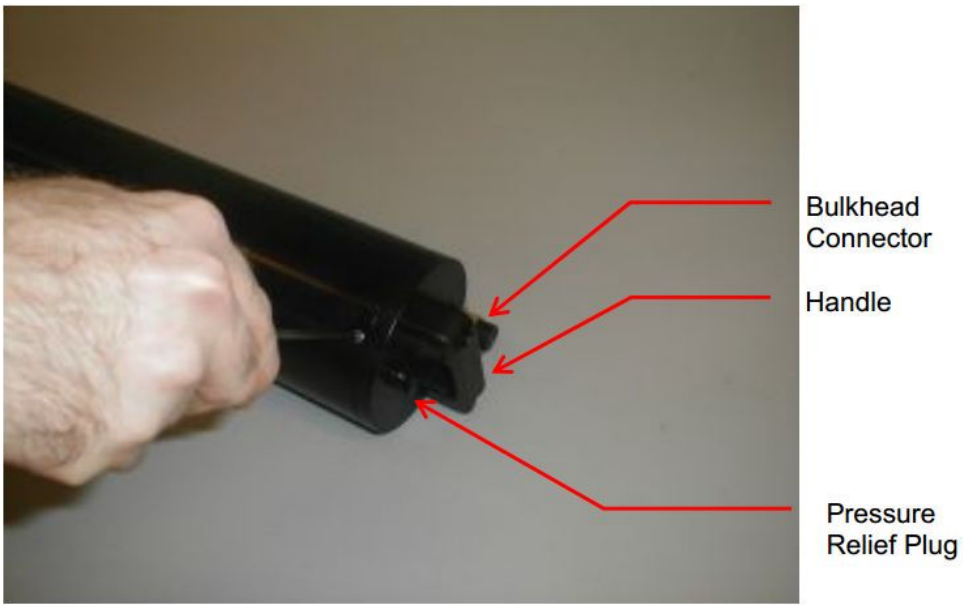
⚠WARNING

If the user thinks that a sensor has water in the pressure housing: Disconnect the sensor from any power supply. Put on safety glasses and make sure that the sensor is pointed away from the body and other people. In a well ventilated area, use the purge port (if the sensor is so equipped), or very SLOWLY loosen the bulkhead connector to let the pressure release.

⚠WARNING

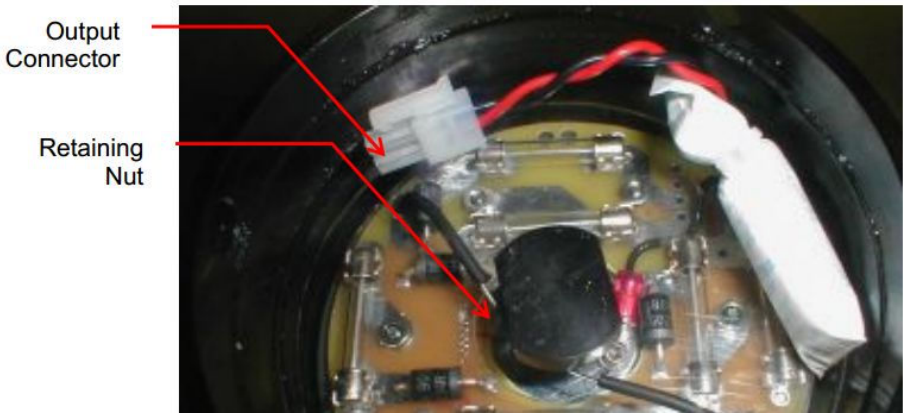
Explosion hazard. If the batteries are not installed correctly, explosive gases can be released. Make sure that the batteries are of the same approved chemical type and are inserted in the correct orientation.

1. Make sure that the battery pack is not pressurized.
2. Disconnect any cables from the battery pack.
3. Remove and save the two 10-32 screws that attach the end flange to the pressure housing.
4. Hold the pressure housing pointed away from the body and face and carefully pull the handle on the end flange to remove it from the pressure housing. This will take some effort because the end flange has two O-rings. Be careful not to pull the end flange too far from the pressure housing as this could cause damage to the electrical connector.

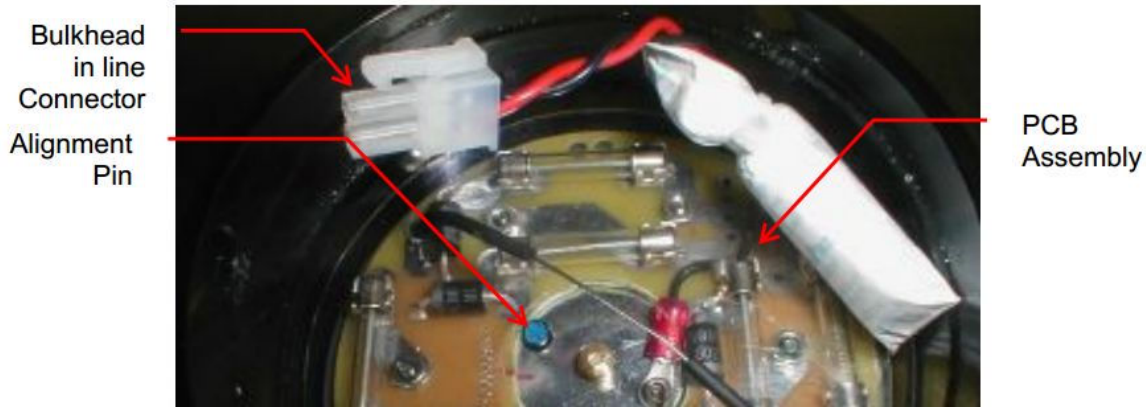


5. Disconnect the electrical connector and set the end flange aside.

6. Remove the retaining nut.
   The printed circuit board (PCB) will rise because of the battery spring contacts.

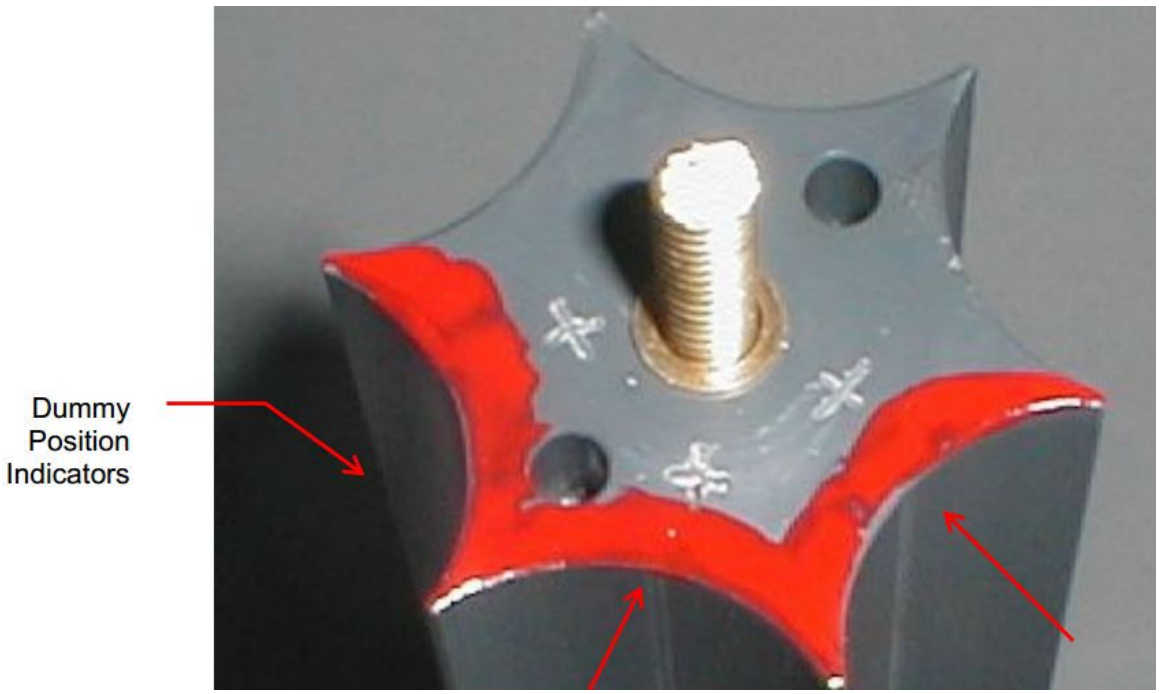


7. Remove the PCB by the handle. Make sure not to pull on the electrical wiring. Make sure the battery contacts on the PCB are clean.

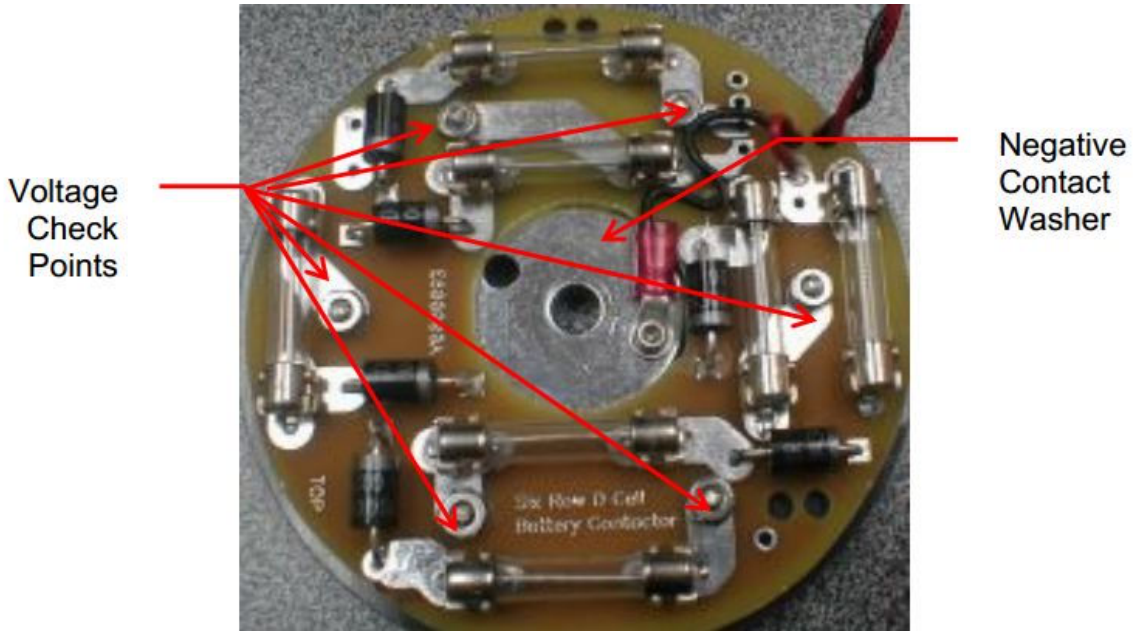


8. Remove the batteries from the pressure housing.
9. Follow local regulations to recycle the batteries.
10. Make sure that the O-rings are pristine. Replace them if there is any question.
11. Insert new cells. Make sure that the positive tabs face up.

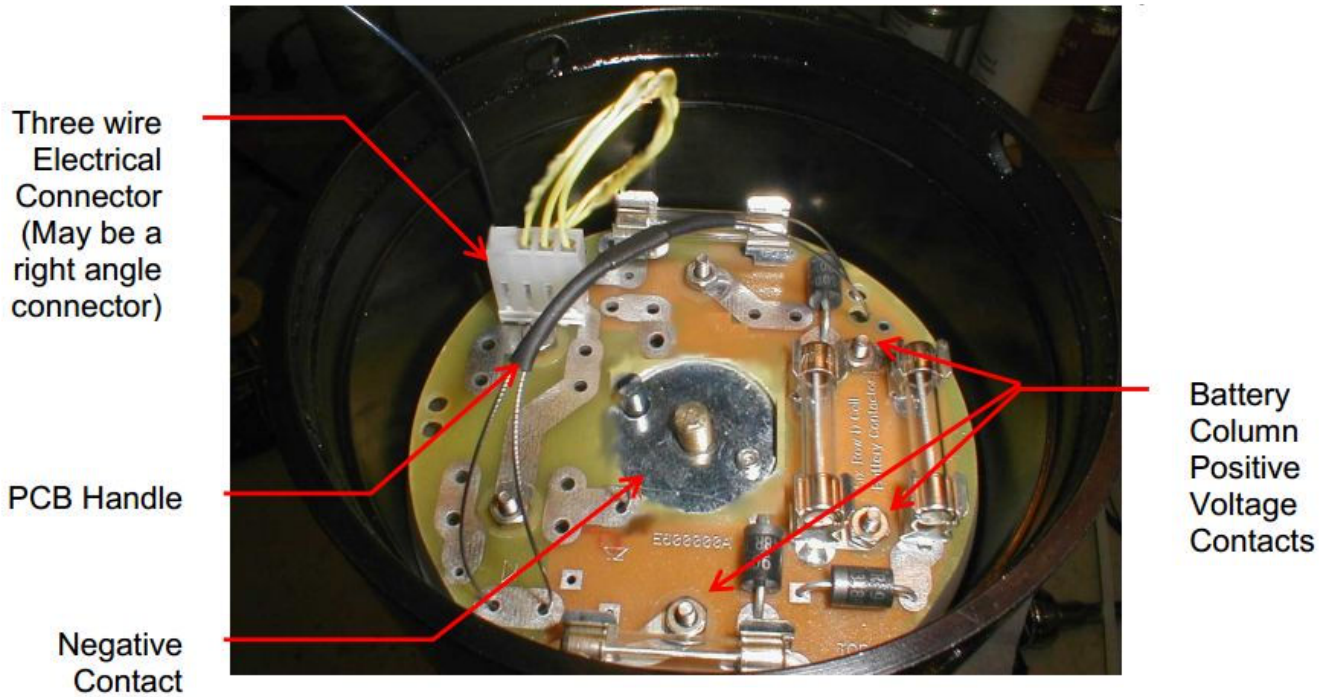
12. 51 Ah units: install four D cell batteries with the positive tab face up, in each of the other three columns marked in red.



13. 51 Ah units: install a dummy D cell in each marked column, then install four more batteries on top of the dummy cells to fill the marked columns. Make sure the batteries and the dummy cells have the tab of the positive ends face up.
14. Install the PCB again. Make sure to align the pin with the hole in the PCB assembly.
15. Install the retaining nut and tighten it until the PCB mounting plate bottoms out on the center column of the internal battery holder.
16. Measure the voltage of each column and verify that it is within the specified range. Use a voltmeter to touch the positive check points and the negative contact washer.



17. 51 Ah units: measure the voltage for the three columns with real batteries.



18. Put the leads of an ohmmeter on either end of each fuse to make sure that they have a value of near 0. There is a small internal resistance of approximately 0.5 ohms.
19. Connect the two-wire connector on the PCB assembly to the connector on the end flange.

20. 51 Ah units: connect the three-wire connector on the PCB assembly to the connector on the end flange.
21. Replace the desiccant pack.
22. Carefully install the end flange into the pressure housing. Make sure that the O-rings are not twisted and the wires are not pinched.
23. Install the 10-32 screws again to attach the end flange to the pressure housing.
24. Examine the pressure relief plug and O-rings. Clean or replace as necessary.
25. Verify that the voltage between contacts 1 and 2 on the bulkhead connector is correct.

3.3 Regular maintenance

Alkaline battery packs require very little maintenance. Protect the unit from impact, flush with fresh water after each deployment, and store it with the dummy connectors to extend the life of this unit. Make sure that the O-rings on the end flange and the pressure relief valve are pristine. Use the manufacturer-supplied Dow-Corning DC-111 to lubricate new O-rings.

Pre-deployment maintenance

Inspect the pressure housing for any damage. Deep cuts or scratches weaken the housing and reduce the depth at which the unit can safely operate. In addition, make sure that—

- the connector is firmly seated and the lock collar is tight.
- the anode is not too corroded.
- the pressure relief valve is seated correctly.

Section 4 General information

⚠WARNING

This product can expose the user to chemicals with silica, crystalline (airborne particles of respirable size), which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

4.1 Warranty

Refer to the manufacturer's website for warranty information (seabird.com/warranty).

4.2 Service and support

The manufacturer recommends that sensors be sent back to the manufacturer annually to be cleaned, calibrated, and for standard maintenance.
Refer to the website for FAQs and technical notes, or contact the manufacturer for support at support@seabird.com. Do the steps below to send a sensor back to the manufacturer.

1. Complete the online Return Merchandise Authorization (RMA) form or contact the manufacturer.
   Note: *The manufacturer is not responsible for damage to the sensor during return shipment.*
2. Remove all batteries from the sensor, if so equipped.
3. Remove all anti-fouling treatments and devices.
   Note: *The manufacturer will not accept sensors that have been treated with anti-fouling compounds for service or repair. This includes AF 24173 devices, tri-butyltin, marine anti-fouling paint, ablative coatings, etc.*
4. Use the sensor's original ruggedized shipping case to send the sensor back to the manufacturer.
5. Write the RMA number on the outside of the shipping case and on the packing list.
6. Use 3rd-day air to ship the sensor back to the manufacturer. Do not use ground shipping.
7. The manufacturer will supply all replacement parts and labor and pay to send the sensor back to the user via 3rd-day air shipping.

4.3 China RoHS disclosure table

Name of Part	Hazardous substance or element in product					
	Pb	Hg	Cd	Cr(VI))	PBB	PBDE
PCBs	X	O	O	O	O	O
Battery pack	X	O	O	O	O	O
Cables	X	O	O	O	O	O
Housing	O	O	O	O	O	O
Mounting hardware	O	O	O	O	O	O
Accessories	O	O	O	O	O	O
This table is compiled to the SJ/T 11364 standard.						
O: This hazardous substance is below the specified limits as described in GB/T 26572. X: This hazardous substance is above the specified limits as described in GB/T 26572.						

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