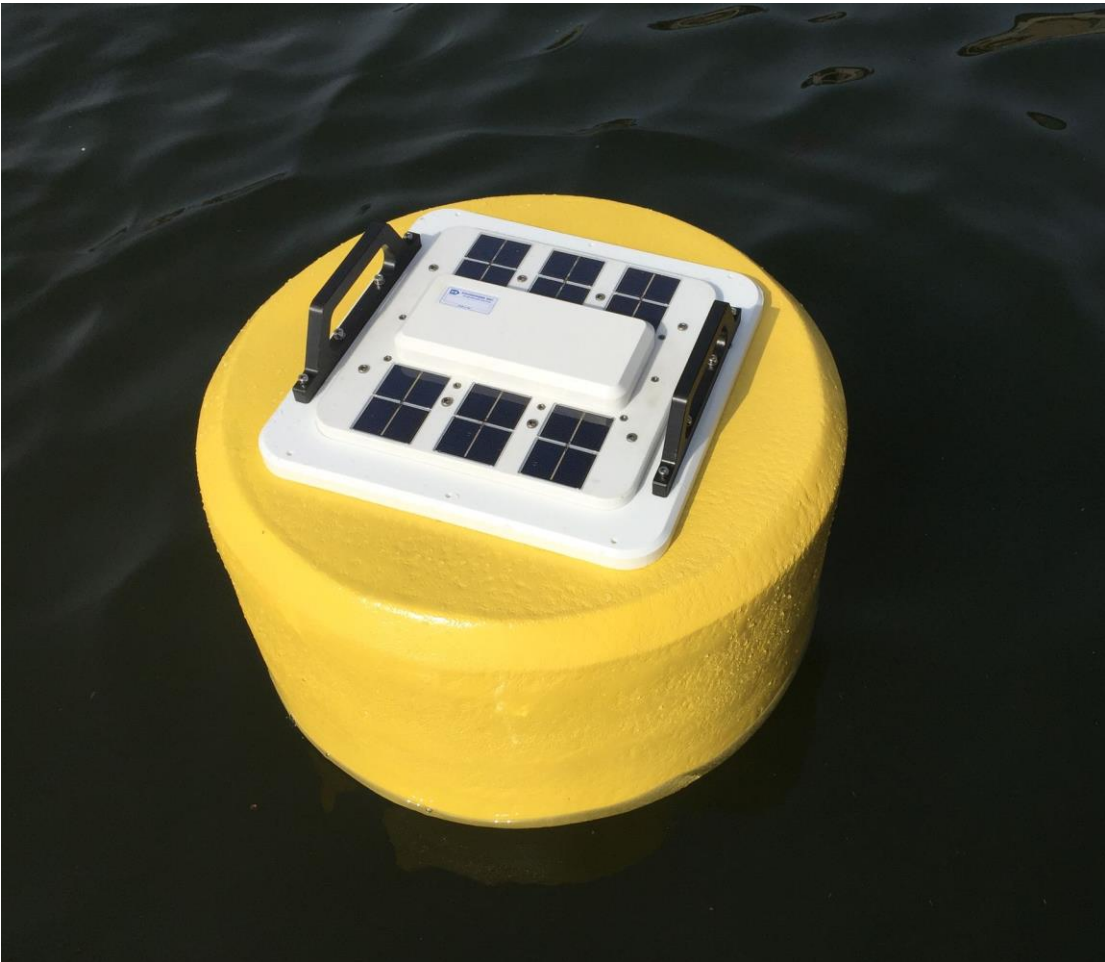




# Ultibuoy Manual

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# 1 Table of Contents

2	Hardware .....	2
2.1	Inductive Coupler.....	2
2.2	Top cable Termination .....	2
2.3	Bottom Cable Termination.....	3
2.3.1	Before Starting the Bottom Termination .....	3
2.3.2	Bottom Cable Termination procedure.....	4
2.4	Anode.....	6
2.4.1	When to Replace the Anode .....	6
2.4.2	Replacing the Anode .....	6
2.5	Replacement Parts List.....	8

## 2 Hardware

### 2.1 Inductive Coupler

The inductive coupler connects the buoy controller to the mooring cable allowing inductive telemetry with sensors on the mooring cable. The connection requires the mooring cable to pass through the ferrite ring of the coupler. There are two types of coupler – swivel couplers and non-swivel couplers. This document describes only non-swivel couplers.

The inductive coupler is a potted assembly with a short cable and M8 connector attached. The M8 connector plugs into the buoy controller.



### 2.2 Top cable Termination

Buoys are shipped with the top termination in place. The top termination is swaged and potted, it cannot be removed. If it becomes necessary to replace the top termination please contact Soundnine technical support for assistance.

Figure 1 Inductive Coupler



## 2.3 Bottom Cable Termination

The bottom cable termination uses Nicopress style swaged fittings to hold a wire rope thimble in place. Freshwater deployments using inductive telemetry require a return electrode in the bottom termination.

### 2.3.1 Before Starting the Bottom Termination

Once the swage fittings are installed they cannot be removed. Removing the termination will require cutting the cable.

Verify all components are properly installed on the mooring cable – including XT & XTP sensors and any cable protectors or other components which must be threaded onto the wire.

Verify the desired termination location. Remember it is best to float three to ten meters of chain under the bottom termination. If the bottom termination drags on the bottom it may fail prematurely. If the bottom electrode is buried in mud the inductive telemetry may not work properly.

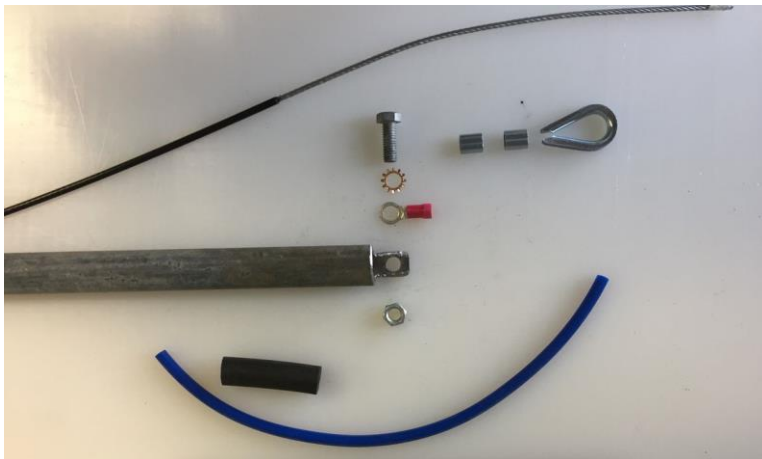


Figure 2 Bottom Termination Components

Table 1 Bottom Termination Components (for 1/8" wire rope)

Qty	Description	S9 Part Number
1	3/8"-16 x 1" galvanized steel bolt	
1	3/8"-16 distorted thread lock nut, zinc plated, grade 2	20729
1	3/8" external tooth bronze lock washer	2053A
34cm	Polyurethane tubing, blue, 5mm ID, 8mm OD	20726
1	Bottom electrode, 1"x10.5" galvanized steel with 3/8" eye.	



6.5cm	Electrode Bumper: Neoprene rubber tube, 3/4" OD, 1/4" ID	2051C
2	Wire Rope Compression Sleeve - Zinc-Plated Copper; for 1/8" Rope Diameter  NOTE: crimp with McMaster-Carr # 3582T1 or equivalent tool.	20713
1	Wire rope thimble for 1/8" wire rope diameter	2051E
1	Ring terminal, 3/8" for wire gauge 8	20717

### 2.3.2 Bottom Cable Termination procedure

1. Strip the 30 cm of jacket off the cable



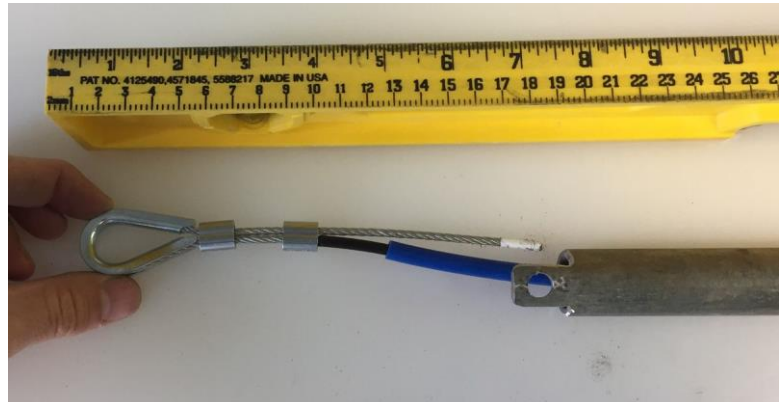
2. Thread the electrode bumper and a 34 cm length of cable protector urethane tube on the cable.



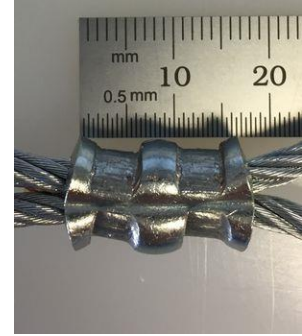
3. Thread the electrode on the cable with the bolt attachment facing the end of the cable.



4. Thread two compression sleeves on the cable with a thimble captured in the cable loop.



5. Pull the bottom cable sleeve tight against the thimble and double-crimp both compression sleeves.



6. Securely crimp the 3/8" ring terminal on the end of the cable. When crimping steel cable more force is required than with copper wire – a good ratcheting crimp tool is required. The red insulation may fall off the terminal when crimped properly.
7. Assemble the ring terminal, bronze star washer, electrode and 3/8" bolt. Position the star washer between the electrode and the ring terminal.
8. Fully tighten the lock nut. The star washer must be fully compressed.
9. Wrap the bottom end of the electrode and ring terminal assembly with vinyl electrical tape to prevent any motion between the blue urethane tube and the bolt head.
10. Position the electrode bumper at the end of the electrode pressing against the blue urethane tube (not visible – inside the electrode). There should be about 2-3cm of the bumper visible. Tape the bumper in place with vinyl electrical tape. Cover about 2cm of end of the electrode, the visible portion of the bumper, and 5cm of the cable with tape.





## 2.4 Anode

The buoy has a sacrificial anode for galvanic corrosion protection. This anode dissolves over time helping preserve the steel components galvanically connected to it. Buoys deployed in freshwater should use an aluminum alloy anode for best protection. Buoys deployed in saltwater should use a zinc alloy anode – the aluminum anode may dissolve too quickly.



Figure 3: Aluminum Alloy Anode

### 2.4.1 When to Replace the Anode

The anode is an inexpensive component intended to extend the useful life of the buoy. It is appropriate to replace it every time the buoy is serviced. Always replace the anode if it has lost approximately one third of its original mass. The standard anode is about 5cm diameter when new, it should be replaced if the diameter is 4cm or less.

### 2.4.2 Replacing the Anode

When removing a used anode always wear gloves to protect yourself from sharp edges on any corroded parts.

The anode is held in place with a distorted-thread lock nut. This nut is not reusable.

Be sure the bronze star washer is correctly positioned between the anode and the steel mount plate. Refer to Figure 4 and Figure 5.

Fully tighten the nut to compress the bronze washer tightly between the anode and the mount plate.



Figure 4: Anode installation top view

Table 2 Anode Components

Qty	Description	S9 Part Number
1	3/8"-16 x 1.5" galvanized steel bolt	
1	3/8"-16 distorted thread lock nut, zinc plated, grade 2	20729
2	0.5" ID x 1.25" OD galvanized steel washer	20538
1	3/8" external tooth bronze lock washer	2053A
1	Aluminum alloy anode, 2" diameter, 1" thick	20718



Figure 5 Anode installation side view

## 2.5 Specifications

Specifications vary with hull design. Soundnine can easily customize buoy hull diameter, thickness, chines, weights and terminations to meet application specific requirements.

### 2.5.1 Swivel

Standard buoys do not include a swivel in the buoy. The swivel option is available for all Ultibuoy shapes, including buoys with inductive modem communications. We do not recommend swivels in low conductivity freshwater applications with inductive communications – swivels reduce the inductive signal coupling from the cable to the water around the buoy.

### 2.5.2 UB70P-IM

For fresh or saltwater applications with inductive modem.

Parameter	Value
Materials	Polyethylene, Polyurea, PET, Galvanized steel
Weight in air	50 Lb
Total Buoyancy (submerged)	150 Lb
Natural frequency	1.2 seconds



## 2.6 Replacement Parts List

Item	Description	Soundnine Part Number	McMaster-Carr Part Number
Anode for fresh water	Aluminum Alloy Corrosion-Inhibiting Pad; 2" Diameter x 1" Thick	20718	3590K2
Anode for salt water	Zinc Alloy Corrosion-Inhibiting Pad; 2" Diameter x 1" Thick		3609K2
Brace w/anode mount	1" x 12" x 0.125" galvanized steel brace with anode mount	50063	NA
Brace	1" x 9" x 0.125" galvanized steel brace	50062	NA
Thimble	Wire rope thimble for 1/8" wire rope diameter	2051E	3494T11
Star washer	3/8" external tooth star washer, bronze	2053A	92164A031
Cable protector tube	Polyurethane tubing, blue, 5mm ID, 8mm OD	20726	
Electrode bumper	Neoprene rubber tube, 3/4" OD, 1/4" ID, cut to 65mm length	2051C	8637K11
3/32" Compression sleep	Wire Rope Compression Sleeve - Zinc-Plated Copper; for 3/32" Rope Diameter NOTE: crimp with McMaster-Carr # 3582T1 or equivalent tool.	20546	3898T33
1/8" Compression sleeve	Wire Rope Compression Sleeve - Zinc-Plated Copper; for 1/8" Rope Diameter NOTE: crimp with McMaster-Carr # 3582T1 or equivalent tool.	20713	3898T14
Ring terminal	Ring terminal, 3/8" for wire gauge 8	20717	7113K224
Threaded rod	3/8"-16 ASTM A193 B7 STEEL THREADED ROD, HOT DIP GALVANIZED		NA

