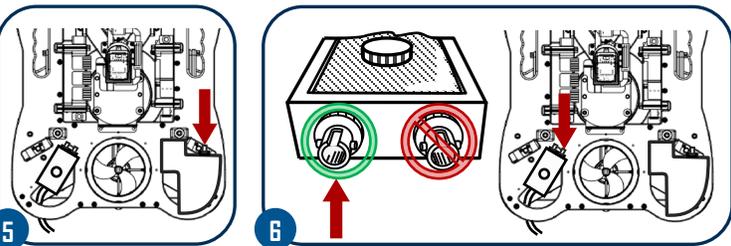
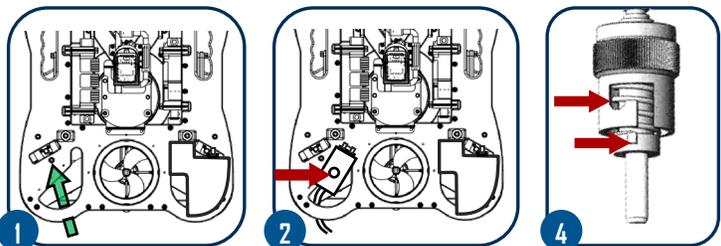




### Fiber Optic Tether Guide

1. Feed the Fiber Optic tether termination block upward through the port aft frame opening
2. Mount the tether termination block to the submersible with thumb screw
3. Remove caps from the patch cable and generously lubricate both ends with supplied Fiber Optic lubricant
4. Take note of twist lock coupling and the locating sleeve of the type ST patch cable connector
5. Carefully align and connect one end of the patch cable to the module on the starboard side
6. Carefully align and connect the other end of the patch cable to the Channel 1 port of the tether termination block
7. Route and secure any excess patch cable slack
8. Connect the submersible strain relief and test all angles to prove no tension is on the tether
9. Connect the tether from the reel to the console 8-pin whip
10. Rotate the red Power Mains clockwise to the on position.
11. Continue with standard connection, power, and function tasks



### Expeditionary Copper Tether Guide

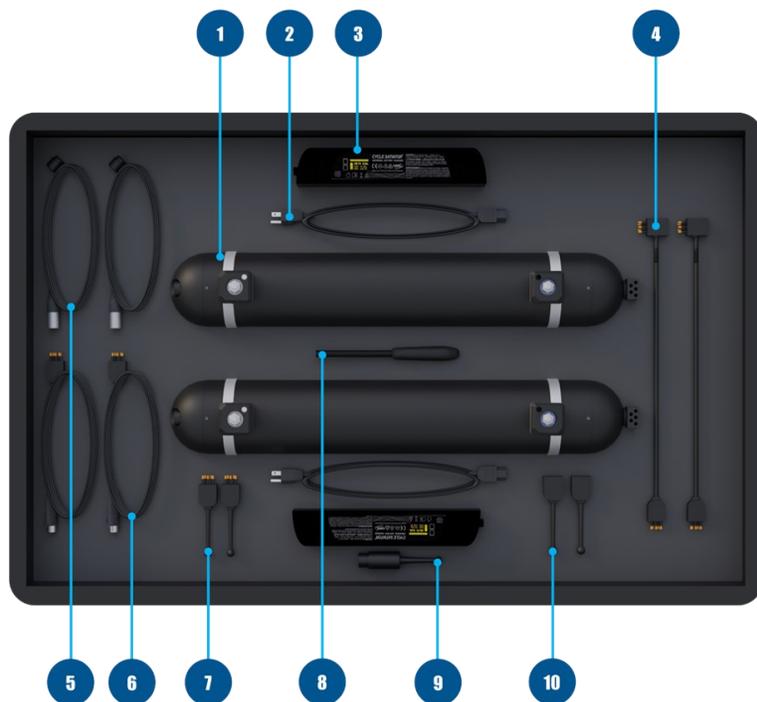
1. Lubricate and connect the 8-pin tether connector to the submersible 8-pin whip. Tighten the threaded collar to secure
2. Connect the submersible strain relief and test all angles to prove no tension is on the tether
3. Insert and secure the 2590 battery in the Expeditionary Reel battery port
4. Verify Fischer cable end labels and connect tablet to reel HMI port
5. Continue with standard connection, power, and function tasks

This Quick Guide provides a basic overview and instructions for using Nickel Metal Hydride (NiMH) or Lithium-ion (Li-ion) Mission Specialist Subsea Battery sets and corresponding tether. Refer to the printed guide included with the battery set for detailed instructions.



### Subsea Battery Set Contents

1. Subsea Battery (2)
2. Charger A/C Power Cord (2)
3. Battery Charger (2)
4. 5-Pin FM/M to 5-Pin Male Power Cable (2)
5. Charger Port to XLR Charging Cable (2)
6. XLR to 5-Pin Male Charging Cable (2)
7. 5-Pin Male Dummy Plug (2)
8. Power Wand
9. 8-Pin Tether Dummy Plug w/ Cap
10. 5-Pin Female Dummy Plug (2)



# Subsea Battery Operation Guide

## Battery Installation

*Ensure subsea battery pair has different Node IDs (32/33).*

*Use a silicon-based lubricant when making all connections.*

Remove the float block.

Disconnect port and starboard 5-pin connector chains from the power module and 5-pin extension whip (orange cable on the port side of the submersible).

Add the 5-pin battery connector to the chain of connections. Repeat this process for both 5-pin chains.

Insert the remaining other end of the battery's 5-pin whips through the openings of the frame above both the horizontal aft thrusters.

Turn submersible on its side or upside down. Use caution if a USBL beacon is attached.

Line up and insert the battery camlocks into the corresponding square openings in the lower frame (skid), ensuring the 5-pin ports are at the aft end of the submersible.

Twist camlocks clockwise to secure both batteries to the frame, then turn submersible right side up.

Connect the battery cables into the open 5-pin battery ports for each side.

If using fiber optic tether, connect the dummy plug to the 8-pin power module whip and secure with threaded cap.

Tuck any cable slack into the frame and replace the float block.

## Turning on Batteries

*When turning on the batteries, powering up one battery will automatically power up the other battery.*

Power up the batteries by inserting the included power wand into the circular opening in the center forward-facing end of one of the batteries. Fully insert the wand for approximately one second and remove, after which two audible tones should be heard from each battery.

Wait several seconds to confirm power by observing illuminated led's on the Power and/or Communications modules. Both batteries are now turned on and providing power to the submersible.

## General Operation

Launch the submersible and check/adjust ballast and trim.

With the batteries mounted below the frame, be cognizant of the submersible's deeper draft. Increase minimum altitude from bottom to avoid inadvertent grounding on the sea floor.

Li-ion batteries can be used at the default power setting of 1,000 watts or greater if the mission demands it.

If using NiMH batteries, reduce the power setting to 700 watts via the Home tab in the Flight View menu. This power setting will extend the flight time with little effect on piloting and accessories.

## Battery Depletion

During extended periods of use, the batteries may experience excessive power drain resulting in insufficient power for continued normal use. In addition to on-screen battery meters indicating low levels, signs and symptoms of insufficient power will become apparent in the control software, to include freezing of the video feed, the ribbon compass going dark, or the video feed going dark.

If this occurs, safe recovery of the submersible should now be the priority of the pilot. Recommended actions are as follows:

- ⇒ Disable all Auto controls and turn off LEDs
- ⇒ Reduce power setting to 500 watts
- ⇒ Enable all Auto controls
- ⇒ Navigate to safety, disable Auto controls, and recover the submersible

## Turning off Batteries

*Turning off the batteries requires each battery to be independently powered down.*

Insert and hold the power wand into the center opening of each battery for approximately one second to turn power off. A single audible tone should be heard when powering down.

Confirm power to the ROV is off and that the led lights on the power and communications modules are no longer illuminating.

## Charging Batteries

*Batteries must be turned off prior to charging. Batteries can be charged while attached to the submersible or while in the battery case.*

Connect the XLR end of the cable to the XLR cable on the battery charger. Connect the 5-pin end of the cable to the 5-pin socket on the battery.

Once plugged in to a power source, the charger will power on. Use the two buttons to cycle through the charging profiles until the desired profile is displayed, either "NiMH sub" or "Lithium sub". *Make sure "sub" is next to the desired profile.*

Press and hold the bottom button and release when OKAY is displayed.

If CONNECT BATTERY is displayed after releasing the bottom button, press and hold the bottom button again and then release when FORCE START appears.

It will take a few seconds for the batteries to begin charging. The battery icon on the left side of the display will then indicate charging status. The batteries turn on while charging and will shut off automatically after 5 minutes once charging is complete.

After charging, remove the charging cables from the batteries. Store charger, cables, and batteries in the watertight case after they are rinsed and dry.