

# ARC-2/STM-4

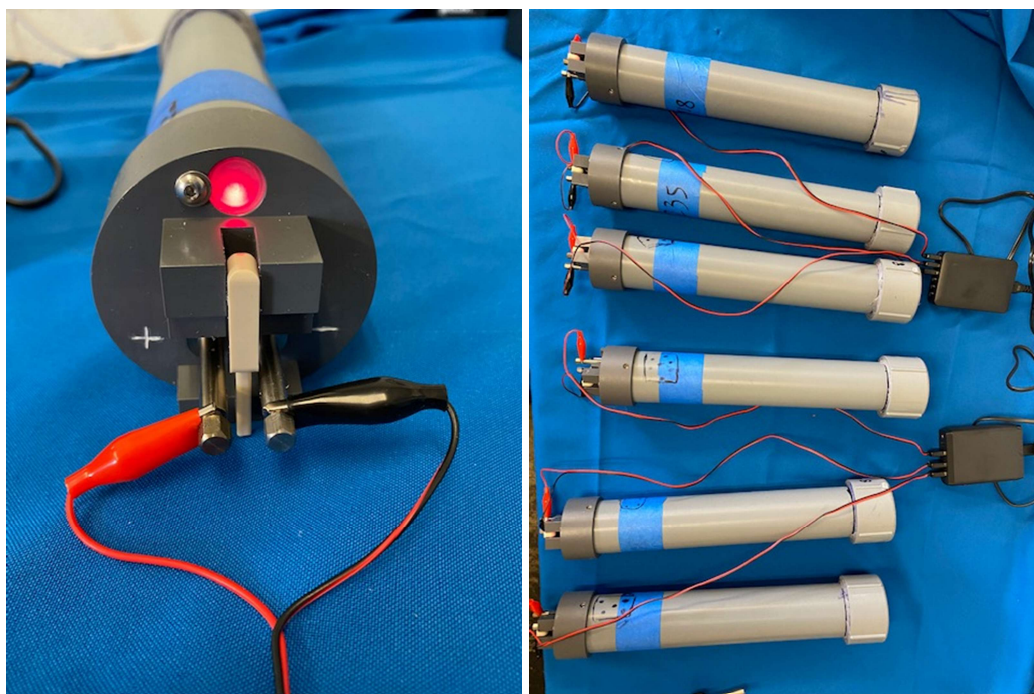
Operators Manual (including video and document links in [blue text](#))

04DEC20



**The ARC-2 system uses an STM-4 deck box with an easy on/off single switch operation.**

- 1) Charge ARC-2 using supplied charging adapter.
  - a) Remove release wire. **Caution: Extended charging with the release wire installed may damage the charger.**
  - b) Connect the supplied charger to a 110V-240V AC supply.
  - c) Connect charging cable USB plug to the charger.
    - i) Connect charging clip (RED) to release post marked "+"
    - ii) Connect charging clip (BLACK) to release post marked "-".
  - d) Tap the the transducer end of the ARC-2 with a hard object to wake the ARC-2 from sleep mode to initiate charge cycle. The LED must blink. The charge in progress blink pattern is 1 sec ON, 1 sec OFF.
  - e) Charge until the STATUS LED blink pattern is 1 second ON, 3 second OFF to indicate a fully charged battery. Full charge time may be 8-24 hours. Estimated battery life per charge is a combination of about 18 months of operation or 500 release cycles. For example, over eight months of operation, a charge should support about one release action per day.

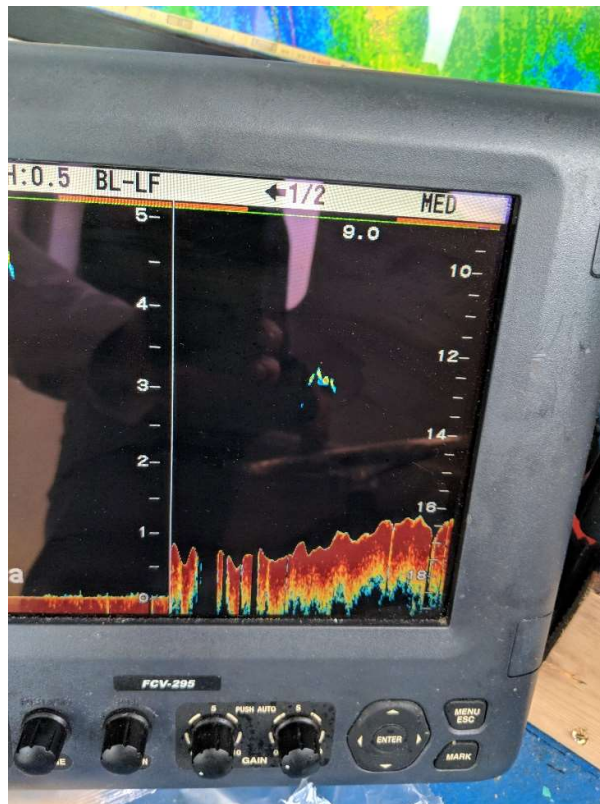


ARC-2 connected to the USB charger.

- 2) Installing the STM-4 Deck Box
  - a) You can keep the STM-4 in its Pelican case, or you can remove the instrument panel from the Pelican case and mount on an accessible bulkhead / wall / compartment of the boat.
  - b) Connect STM-4 to power:
    - i) Using the supplied 110V-220V AC power adapter (standard wall plug), or
    - ii) Wire directly into the boat 12V system using the supplied cabling
  - c) Connect the sonar transducer:
    - i) The *over-the-side transducer* is for portable installations. Connect the transducer cable to the STM-4, and lower the transducer 2m into the water, and below the keel line of the boat. This transducer can only be used if the boat is standing still or moving at slow speed. To use at a low boat speed or in rough seas, suspend a small lead weight of about 5lbs / 2kg on a rope about 1 foot / 0.3 m below the transducer. Tie the rope to the transducer cage. This helps keep it submerged. Or,
    - d) The *through-hull transducer* is for a permanent installation. This transducer is mounted flush with the hull and supports operation at higher boat speeds. It efficiently transmits the interrogate signal in a 60-90 degrees beam, providing better performance at greater depths such as over 200m. Follow the [transducer installation instructions](#) for the P319 housing model
- 3) [Arming the ARC-2](#)
  - a) Insert release cord into the release cord slot. Close lever arm over the release cord.
  - b) Loosen burn post set screws and insert a length of release wire and then tighten set screws until snug. Leave a little bit of wire at both ends to make removing release wire remnants easier. Lever arm should now be under the release wire. **Caution: Use only the supplied AWG26 nickel-chromium release wire. This wire has the high resistance needed for effective fusing. Other wire such as copper or stainless steel will damage the electronics.**
  - c) Release cord is typically 3mm braided nylon, with a knot-free loop formed by splicing. The pulling force must be straight up (in line with the ARC-2 body) to prevent snags. The setup is application specific. When using the ARC-2 to drop a weight, the mechanism generally

doesn't need any protection. But, in ropeless fishing applications where the ARC-2 is attached to a mesh release bag and used to release floats, the ARC-2 mechanism may be equipped with a stainless-steel U-Bolt cage that protects the mechanism against impacts and guides the release cord pull in the desired 'up' direction. Well thought-out configuration of the overall release system (mechanism, release cord, mesh bag, rope selection, floats etc.) is essential to assuring reliable release operation. U-Bolts do not come standard with the ARC-2 system.

- d) Consider and practice your backup recovery method in case of a release system fail. While a well-thought-out system operated by an experienced operator will reduce fail incidents to a few percentage points, snags will occur at some rate. In ropeless fishing, the backup is generally release localization by acoustic ranging or depth sounder, followed by grappling. Experienced fishers have demonstrated an ability to efficiently recover 100% of localized gear.



**A release bag with hard float buoys displayed on a depth sounder.**

#### 4) [Deploy the ARC-2](#)

Once armed, the ARC-2 is ready for deployment. The video link shows a harbor test of the ARC-2. Be sure to also check the video links in the other section headers of this document.

#### 5) [Triggering the Release](#)

- a) Make sure the transducer is submerged. Before approaching the first of your submerged releases, turn the STM-4 power switch to the ON position. This initiates the following action.
  - i) The STM-4 has a 20 second bootup process before it starts sending the release command to the ARC-2. Once booted the STM-4 will send the owner specific release code (PIN) once every ten seconds. This persists until the STM-4 is powered off again.
  - ii) Reception of the release code triggers the ARC-2. There is about a 10-13 second delay for capacitor charging and conditioning before the release wire is energized and fuses



*(melts or evaporates)*

- iii) *Following release, the ARC-2 will enter a one-hour blackout period during which no further release command is accepted. This is to allow the fisher to re-deploy a release and move out of acoustic range before the re-deployed release is active again. The ARC-2 will not fall asleep and continue blinking the 'awake' pattern during the blackout period. Once the ARC-2 falls asleep and blinking stops, it is ready for the next cycle.*
- 6) Recover and re-deploy the ARC-2
- a) Arm the ARC-2 (step #3) and deploy. Note that there is a one-hour post-release blackout period during which the ARC-2 will not initiate another release.
- 7) In case of a problem.
- a) To provide a way to recover from any potential lock-up, the ARC-2 is equipped with a magnetic RESET switch. Hold the supplied magnet to the side of the ARC-2 close to the '+' symbol and make sure any LED blinking stops and the LED is off. Then, remove the magnet and the ARC-2 will re-boot. If there is a permanent problem that is not resolved by resetting, the ARC-2 should be returned for service.



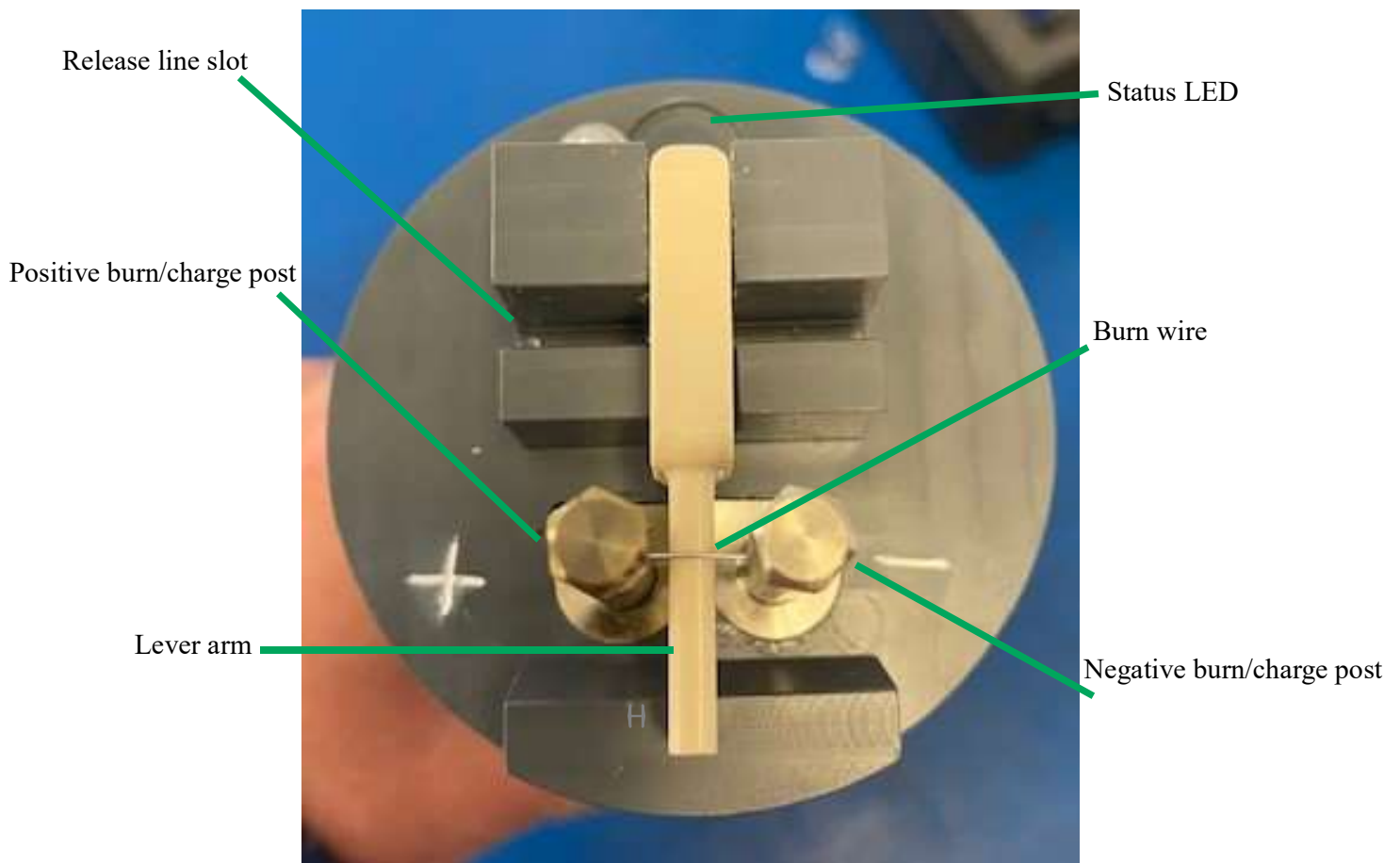
**To re-boot the ARC-2, hold the supplied magnet to the side of the ARC-2 close to the + symbol as shown. Make sure the LED blinking has stopped and LED is OFF. Then, remove the magnet. The ARC-2 will now re-boot. Use re-boot in case of a lockup. It can also be used to clear the one hour post-release blackout during testing.**

### **ARC-2 blink patterns**

<b>Blink Pattern</b>	<b>Indication</b>
Off (no blinking)	Sleep mode. Wakes automatically once a signal is received.
Brief blink, once per second	ARC-2 is awake and is listening for commands. (It will sleep again if no signal has been received for about 30-60 seconds)
Double blink, once per second	ARC-2 has received a valid command from the STM-4.
1 sec ON, 1 sec OFF	Battery charging is in progress
1 sec ON, 3 sec OFF	Battery charging is completed
Solid ON	A release has been triggered and the ARC-2 is charging and conditioning its capacitor. This persists for 10-20 seconds, and then the release triggers.
Other blink patterns	Complex blink pattern is emitted at boot-up, such as when the magnet is used to RESET the ARC-2. An unrecognized blink pattern at any other time is indicative of an error. Try resetting the ARC-2, and do not deploy and the problem is resolved.



The ARC-2 housing is sealed and is not field serviceable (in contrast to the ARC-1). Factory service such as to replace the rechargeable lithium-ion battery is possible by returning the ARC-2 for service. The expected lifetime use of an ARC-2 and internal battery is up to 10 years.



The release end of the ARC-2. Shown in armed state with release wire installed. The two posts also serve to charge the internal battery.