

Chelonia F-POD integral acoustic release 'AR'

This unit consists of a motorised release mechanism with its own batteries and a retrieval line cannister. It replaces the normal lid of an F-POD and is electrically connected to it via a small wire with paired connection plugs.

The AR does not allow two-way communication between the deck unit and the AR or give any indication of range or direction to the AR from the deck unit location. It can operate to 100m depth and can operate in locations with high bio-fouling rates. The retrieval line cannister holds 80m of braided nylon cord with a breaking strain of approx. 130kg or a greater length of Dyneema line or similar. This is essential to retrieve the line cannister and lower half of the release mechanism.

The POD can be set to not listen for the acoustic release code until a chosen day and time. To detect the release signal from the deck unit the F-POD itself must be ON. The POD can also be set to force release at a chosen day and time. All PODs from numbers 0 to 999 have their own release code, and these are repeated for subsequent 1000s.

Normal use:

The AR is shown here on a full-sized F-POD with a light anchor. It can operate with the 12 alkaline D-cell version or the Lithium Rechargeable version (25 cells of 21700 size), which can run for 8 months continuously or 15 months if logging alternate minutes.

The AR can also be used with the smaller LF-POD that is powered by 10 lithium cells.

Combined with a conventional WAVE file logger:

Chelonia does not support combined use but recognises that some users will wish to do this so the advice here is intended to be helpful, but users must assess the risks themselves.

Most conventional WAVE file loggers, such as the SoundTrap, are not buoyant and additional flotation, capable of tolerating the water pressure, must be provided. Issues to consider are:

1. The WAVE logger may create an acoustic shadow impairing the performance of the POD if it is near the transducer housing.
2. Changes to the angle of the POD to vertical may have small effects on its sensitivity.
3. Drag on the anchor will be higher.
4. The risk of entanglements will be higher.
5. A rope to the flotation may rub against the POD transducer housing creating noise.

Use purely as an acoustic release:

Chelonia does not support this use but recognises that some users will wish to do this so the advice here is intended to be helpful, but users must assess the risks themselves.

The most appropriate configuration would be: An LF-POD set to be OFF until near the time that release is required plus a 'force release ON' date towards the end of the potential recovery period. The acoustic 'view' of the POD transducer housing must not be obstructed or it may be unable to hear the release signals.

Logging can be configured so that the F-POD logs all clicks that might have contributed to triggering its release. This has some value in reviewing the performance of the release algorithm.

The size of the load that the AR can manage has not been assessed or tested and will be determined in part by the water current flow rates etc. at the site.



Technical issues:

The release mechanism when static can tolerate a load of at least 20kg pull or lift. This load comes from the buoyancy of the entire rig plus any drag created by local water movements.

The normal load is about 0.5kg lift from the buoyancy.

The load is held by a screw thread which is unscrewed by motor. A heavy load might exceed the capacity of this motor to activate the screw. You can test this by setting a timed release for any convenient hour rollover - it can't be set to minutes within the hour.

Future Developments:

Sacrificial anchor: A different lower half of the release mechanism that has no retrieval line but leaves a small ferrous metal link on the seabed attached to a sacrificial anchor.

A weak-link section for the anchor line to address the problem of the anchor being impossible to lift on the retrieval line.

Software controls:

The pre-set release time is set here if required as 'Force release on':

Changing operational settings of an F-POD

| | | | | | | |
|--------------------------------|--------------------------|---|-------|----|----|---|
| Settings for any F-POD: | | F-PODs have default settings that are the same as those shown unless the settings have been changed as below. | | | | |
| Batteries: | 25 Li rechargeable | F's run with their last settings until changed as below | | | | |
| Continuous logging? | continuous | Acoustic release: | | | | |
| Months sleeping | | yy | MM | dd | hh | |
| Acoustic release in use | <input type="checkbox"/> | Do not release before: | 20 99 | 1 | 1 | 1 |
| | | Force release on: : | 20 99 | 1 | 1 | 1 |

And prior to that release an acoustically triggered release is possible any time that the POD is ON after the 'Do not release before' date.