

LF-POD

User Guide



1 Introduction

This User Guide describes how to set up, deploy and retrieve data from your LF-POD.

LF-PODs are smaller, shorter deployment time versions of the F-POD. They are fully automated, static, passive acoustic monitoring systems that detect porpoises, dolphins and other toothed whales by recognising the trains of echo-location clicks they make to detect their prey, orientate and interact.

The ability of LF-PODs to accept broadband clicks means that:

- different filter settings are unnecessary, making setup very simple
- logging is very uniform between different LF-PODs within a project
- there is an opportunity to integrate data from different projects over wide geographical areas.

The LF-POD click data are stored on an SD card in the POD.

After deployment, the data are downloaded from the SD card onto a PC and are then analysed using the supplied FPOD.exe PC app. The app automatically identifies the presence of cetaceans by detecting the trains of ultrasonic echo-location clicks they produce. The app can also be used to compare LF-POD, F-POD and C-POD data.

Help and support

We offer full email support and will be pleased to help with queries on any aspect of LF-POD use.

Your LF-POD purchase also entitles you to free future app upgrades.

We offer a range of additional services, including data analysis and interpretation.

You can find more information and the latest app and documentation on our web site at www.chelonia.co.uk.

Keep up to date with important changes by joining the Chelonia User Group, at www.chelonia.co.uk/cug_join.htm.

You can also contact us in the following ways:

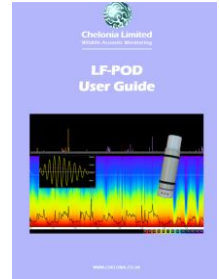
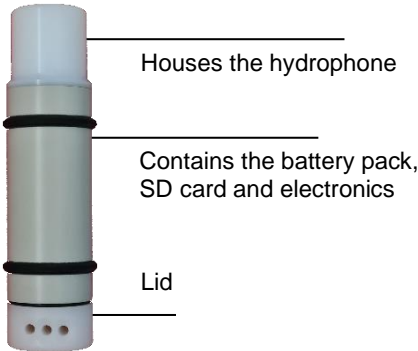
Chelonia Limited
The Barkhouse
North Cliff
Mousehole
Penzance
TR19 6PH
UK

Tel: +44 (0)1736 732462
Email: team@chelonia.co.uk

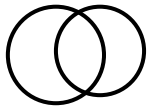


2 Checking parts

Once you have unpacked your LF-POD, check to make sure that you have all the correct parts:



LF-POD
User Guide



Spare O-rings



two micro SD
cards and
adapters



SD card reader

The LF-POD consists of a polypropylene casing with hydrophone housing at one end and a removable lid at the other end.

LF-PODs are very robust, but be careful not to drop the LF-POD or subject it to hard knocks, as this might interrupt the power supply.

PODs are identified by a unique number that is shown on labels on the SD cards and on the POD housing under the upper buffer ring.

Spare O-rings

O-rings are used to seal the lid and keep it waterproof when it is closed. Use these spares to replace the existing O-rings if they become damaged.

SD cards

Two 32 GB micro SD cards and adapters are supplied with each POD.

No setup is required – all the setup information for the LF-POD is already in the POD. When the POD is deployed, it writes click data to the SD card. On retrieval, you copy the data from the SD card to a PC running the FPOD.exe app. When you retrieve a POD after deployment, you can replace the micro SD card with the spare and immediately redeploy the POD.

LF-PODs can use any *blank* micro SD card up to 32 GB. See ***Error! Reference source not found.*** on page ***Error! Bookmark not defined.*** for more information about micro SD card capacity.

Additional requirements

In order to run the POD app and download data from the SD cards, you need a computer running Microsoft Windows.

The LF-POD uses 4 alkaline, lithium, or NiMH rechargeable D-cell batteries (not supplied). See the section ***Error! Reference source not found.*** on page ***Error! Bookmark not defined.*** for advice on how to plan your deployment time.

The section *Retrieving LF-PODs* on page 11 contains a recommended kit list for deploying and retrieving PODs.

3 Setting up LF-PODs for deployment



It is strongly recommended that before you deploy your PODs, you practice setup, starting, closing, opening and downloading data, as described in this section and sections 6 and 7, so that you are confident with the operating procedures.

Setup options

The LF-POD app allows you change the following setup options:

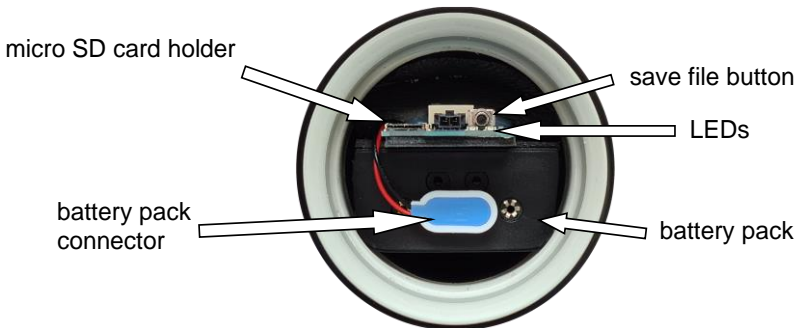
- using different types of battery
- continuous or intermittent logging
- switch angle settings
- resetting the internal clock, for example, to use local time rather than UTC.

All the above options and more advanced options are described in the *F-POD Software Guide*.

Opening the LF-POD

1. Use a screwdriver or bar through any one of the three holes in the lid to remove it by rotating it anti-clockwise (as seen looking at the lid end).

Internal parts



Installing batteries

The LF-POD has a removable battery pack that holds 4 D-cells.

For most purposes, alkaline D-cells are recommended. See ***Error! Reference source not found.*** on page ***Error! Bookmark not defined.*** for more information.

LF-POD buoyancy varies with total cell weight. Positive buoyancy is approximately 0.3 kg with alkaline and 0.5 kg with lithium D cells.

To install the batteries:

1. Inspect the batteries for damage. If the insulation around the outside casing of the battery is damaged, it can cause the battery pack to short-circuit. Either repair it with tape or use a new battery.
2. Carefully remove the battery pack connector.
3. Slide the battery pack out of the POD.
4. Insert the 4 D-cells into the battery pack.



5. Slide the battery pack into the POD and fit the connector.
The LF-POD uses no power in this mode. It will not use battery power until the POD is started.

Starting the LF-POD

1. Use one of the 32 GB micro SD cards provided by Chelonia. If one is not available, any *blank* micro SD card up to 32 GB can be used.
2. Check that the SD card is blank. This ensures that you have the maximum amount of space on the card.



If the SD card still has LF-POD data on it, the POD will start, but there is less space available for new data (see ***Error! Reference source not found.*** on page ***Error! Bookmark not defined.***).

3. Insert the SD card into the card holder in the POD. Push the card down gently until it clicks into place. This switches on the POD.

The LEDs light in the following order: 2 red while the POD starts up, then 2 white, followed by 1 blue to indicate that the batteries are OK and finally 2 green flashes 5 times to indicate that the POD has started running.



If the blue LED does not light, there is a problem with a battery stack. Stop the POD and check the batteries.



If, after startup, one LED flashes red every 4 seconds, there is a problem. Possibly, the SD card is full or there are already 10 deployment data files on the card. Remove the SD card, delete any files on it and try again.

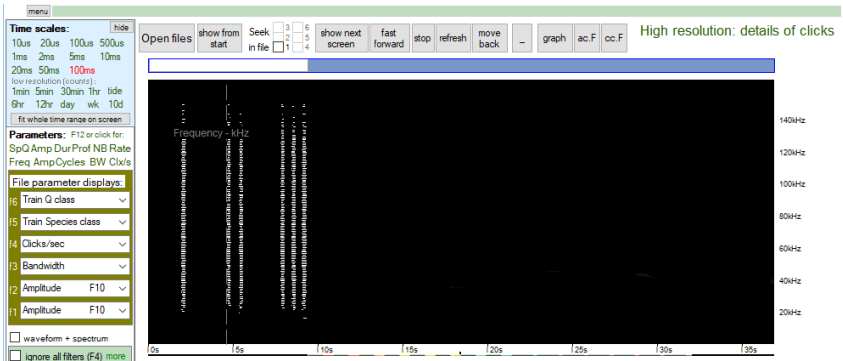
The LF-POD has an accurate internal clock that has been set to UTC (Coordinated Universal Time) and one LED will now briefly flash green every minute and continue to flash if there is data to be written to the SD card, e.g. from any local ultrasound noise from sources such as fluorescent lighting or laptops. If data is being recorded you will often see some amber flashes just before the green flash.

4. Wait until you see the LED briefly flash green on the minute rollover to confirm that the POD is running.

Checking the POD starts, runs and stops

If you want to check that the POD runs and records data before you start a deployment, you can do the following quick test:

1. Start the POD as above.
2. Invert the POD so the hydrophone is pointed upwards in case the angle sensor is set to only switch on when above horizontal.
3. Wait for 2 minutes to roll over.
4. Stroke the hydrophone housing a few times with your finger in a simple sequence such as 1 stroke, pause, 2 strokes, pause, 3 strokes.
5. Stop the POD (see *Stopping the POD* on page 11).
6. View the data in FPOD.exe (see the *LF-POD Software Guide*). You should see your sequence if you view the data at 50 ms time resolution. For example:



Closing the POD

The lid is supplied with two O-rings. The O-rings have been lightly lubricated using a PTFE dry-lube oil to ensure that the lid tightens smoothly.

Tip: If you want to lubricate the O-rings before deployment, using a dry-lube lubricant minimises stickiness that might attract dust and grit.

PODs have a lid with 10 mm diameter holes for attaching mooring lines (see the figure below and **Error! Reference source not found.** on page **Error! Bookmark not defined.**). Use a bar or screwdriver located in one of the holes to open and close the lid.

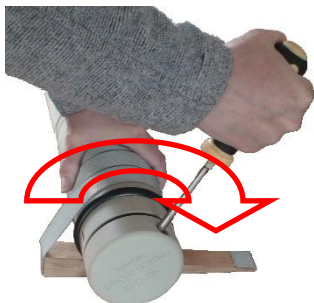
To close the POD:

1. Make sure there are two O-rings in place on the lid.



Check that the O-rings are clean. Check particularly that there are no hairs, grit or sand trapped beneath the O-rings as these could cause damaging leaks.

2. Align the lid and housing carefully and begin screwing them together until the visible O-ring is beginning to be compressed. You will feel an increase in resistance when the lid starts to press on the outer O-ring. From that point, a further quarter of a turn will complete the closure. The strap wrench shown here is not essential.



The POD is now ready for deployment.

4 Retrieving LF-PODs

It is recommended that you take the following kit with you when you retrieve PODs at sea:

- the spare SD card
- a means of recording your observations
- a scrubber and scraper to remove bio-fouling
- a heavy screwdriver and POD wrench to open and close the POD
- a towel
- paper towels to clean any sand or grit that may have lodged under the O-rings
- a spare set of O-rings in case of damage
- new batteries for redeployment
- a voltmeter to check battery condition if you want to re-use batteries
- a waterproof marker pen to write contact details on the POD housing
- any tools for your attachment method
- a splash-proof box for this kit

Opening the LF-POD after deployment

When you retrieve an LF-POD:

1. Use a plastic scraper to clean off any heavy fouling.
2. Scrub and wash the housing.
3. Dry the POD and lid, especially around the O-ring.
4. Open the POD in a dry, stable location.

Stopping the POD

If the POD is running correctly, one LED will briefly flash green or amber every minute.

To stop the POD:

1. Press and release the **Save File** button carefully.
 - If the POD has already shut down, both LEDs will immediately flash multicolours and you can eject the SD card.
 - If there is data to save, the right LED flashes amber rapidly while the data is written to the SD card, then both flash multicolours. As soon as the multicolour flashing starts you can eject the SD card.
 2. Remove the micro SD card and put it in the labelled SD card adapter.
-

3. If you want to redeploy the POD immediately, go to the section *Redeploying the LF-POD immediately* below.
4. Remove the battery pack and remove the batteries.
5. Replace the empty battery pack.
6. Inspect the O-rings for damage and replace them if necessary.

Redeploying the LF-POD immediately

If you want to redeploy the LF-POD immediately:

1. Check that the spare SD card has no files on it.
2. Insert the spare SD card into the card holder.

The LEDs goes through its startup sequence and finally both LEDs flash green 4 or 5 times to indicate that the POD has started running.

The left LED will now briefly flash amber or green every minute and continues to flash if there is data to be written to the SD card, e.g. from any local ultrasound sources.

3. Close the POD.
-

5 Maintenance

Cleaning

Use a scrubbing brush to remove all marine growth and dirt completely. Wash and dry the POD.

O-rings



O-rings must be clean of all contamination – especially hairs and grit – before you close the POD. Any dirt on the O-rings may cause water to leak into the POD housing, causing damage to the electronics and loss of data.

Whenever you open the POD, follow the guidelines below:

- Place the POD housing on a clean hard surface.
- Look to see if there is any water between the outer and inner O-rings when the POD is opened.
- If an O-ring has picked up particles, remove it using a blunt tool like the end of a small spoon.
- Carefully clean all surfaces.
- If you are in any doubt about the state of the O-rings, replace them with new ones. A spare set of O-rings is supplied with new PODs. Replacements are available from Chelonia Limited.

Transducer housing

Biofouling or contamination with grease or paint can be removed using the kind of abrasive pads and preparations used for cleaning cooking utensils.

Mooring lines

Inspect the mooring lines after every deployment for signs of wear – mainly abrasion against rough surfaces.

Storage

Before you store your PODs:

- Remove all batteries.
 - Clean off all barnacles and other marine encrustations.
 - Wash the outside of the POD housing and any mooring lines using fresh water.
-

Protect the PODs from direct sunlight, which causes slow deterioration of the housing, O-rings and any mooring lines.

If you are storing PODs in a dry place, leave them open.

If you are storing PODs in a damp place, store them closed.



The Barkhouse, North Cliff, Mousehole,
Penzance, TR19 6PH, UK
Tel: +44 (0)1736 732462
Email: team@chelonia.co.uk
Web: www.chelonia.co.uk
Company Registered in UK, no. 5472768
