

Batmic Capsule

Ultrasonic capsule for the Birdmic parabolic microphone

The Batmic Capsule screws into your Birdmic dish, ONE or PRO, and turns your bird microphone into a **bat detector**. It divides the frequency by ten and brings ultrasound down to where your ears do reach, over a **listening range of 20 to 80 kHz**. It is the same kit, the same cables, and suddenly bats.

It also works on its own, with no dish. It is a microphone with its own thread: you can fix it wherever you like and plug it into a recorder. You will hear the pulses, but you **won't see them**, because the spectrogram comes from the app. Bear in mind that **the cables are not in this box**: for a recorder you need an orange TRS-TRS cable.

And one thing worth saying up front: the dish does not turn the ultrasound up. What it gives you is **direction** — it picks up what you point it at and leaves out a good part of the noise off to the sides, which at night is exactly what you need.

1. What's in the box



Figure A · What's in the box

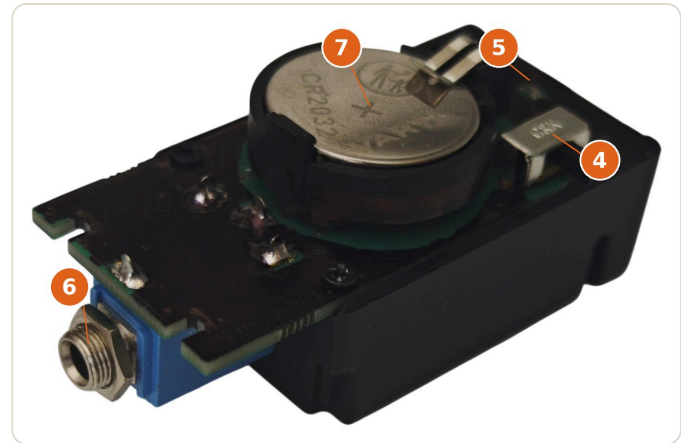


Figure B · The capsule

1 Batmic Capsule · 2 8 mm key · 3 CR2032 battery · 4 ON-OFF switch · 5 Indicator led · 6 Threaded female jack, which is how it fixes to the dish · 7 Battery compartment · 8 Acoustic window: the opening through which ultrasound reaches the internal microphone · 9 Female 1/4" thread, for fixing the capsule wherever suits you · 10 Clip that holds the battery in place.

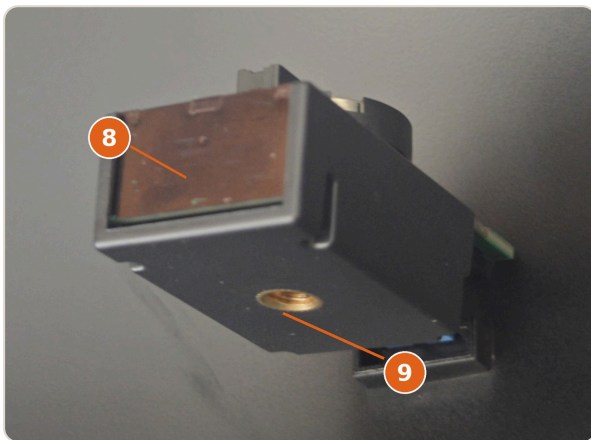


Figure C · Fitted on the dish

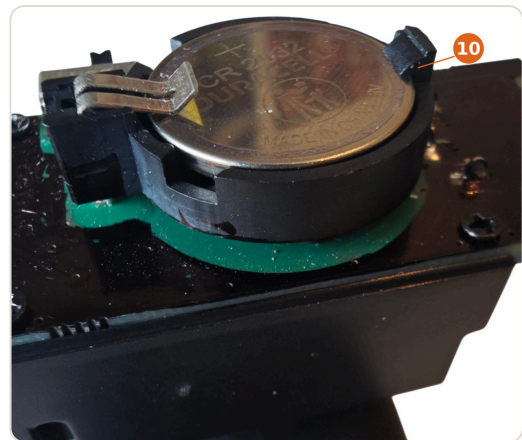


Figure D · The battery and its clip

2 • What you are going to hear

Ultrasound is not a strange kind of sound: it is an ordinary sound that sits **above your hearing**. You reach 18 kHz, if you are lucky. The capsule picks up from **20 to 80 kHz**, divides that frequency by ten and puts it where you can hear it.

Some bats call well above 80 kHz, and those fall outside. But **most of what you are going to come across sits inside that range**.

What comes out is not “the bat talking”. It is **dry clicks**, very fast. A bat going past sounds like a steady series of clicks. When it spots an insect and goes for it, those clicks speed up all at once into a buzz: that is the **feeding buzz**, and it is the moment that hooks everybody.

What it doesn't do: identify species. This technology doesn't allow that: it gives you the frequency and points you towards the genus, and the species is your call. In exchange it gives you what it does allow, which is no small thing: **wide band, with nothing to tune**. A heterodyne detector makes you turn a dial and you miss everything that isn't on that frequency; here you have it all at once and with no adjusting.

3 • The battery

The capsule runs on a **CR2032 button cell**, which is in the box but **does not come fitted**.

To put it in: move the **clip (10)** aside with your finger, place the battery in its compartment **(7)** with the “+” **facing up**, as in Figure D, and press it down until the clip holds it. To take it out, the same move in reverse: move the clip aside and the battery comes out on its own.

Switching on and off. The capsule has an **ON-OFF switch (4)**. At ON, the **led (5) blinks every two seconds**: that means it is working. **Switch it off when you finish the outing**, or you will eat through the battery.

Battery life: up to 80 hours of continuous use on one battery.

How to tell whether the battery will last. There is no warning stage: as long as the **led keeps blinking**, the capsule is working normally. When the battery runs out, the led goes off and the capsule stops working. If it is blinking, you can trust what you are recording.

4 • Fitting it on the dish

The capsule replaces the audible capsule you have fitted.

1. **Hold the capsule from inside the dish** with one hand, and with the other loosen the thread from the outside using the **8 mm key (2)**.
2. Take out the audible capsule and put it away in its box.
3. Put the Batmic Capsule in the same seat, holding it from inside again, and tighten the thread with the key. **All the way, without forcing it.**



Figure E • The 8 mm key on the thread of the dish

It takes two minutes out in the field. As you will often be doing it in the dark, practise the first time at home in the light.

The **acoustic window (8)** sits at the focal point of the dish. Don't cover it and don't clean it with anything. The **1/4" thread (9)** is there for fixing the capsule to a tripod or a mount when you use it without the dish.

5 • Connecting it, depending on what you have

The capsule comes out on a **3.5 mm jack**, so it plugs into almost anything. These are the three usual ways, and what each one needs.

With the Birdmic audio interface

It plugs in directly, no cables in between. You listen on the earphones with the volume, CUT and BOOST you already know. It is the cleanest connection, and the interface gives you the monitoring.

With the Batmic GO splitter

The USB-C splitter of the Batmic GO gives you two jacks: one for the capsule, one for the earphones, and the sound comes back to you through the **app's monitoring function**. It is how you **hear and see at once without carrying the interface**.

Careful about going straight to the phone. With an ordinary USB-C adapter you will see the spectrogram and record, but **you won't hear anything** while you do: that adapter has no earphone output. To listen you need the **audio interface** or the **Batmic GO splitter**, and the GO costs much the same as building it from parts.

With a field recorder

You need an **orange TRS-TRS cable**, not included in this box. You record and listen from the recorder itself, with no phone and no app. What you won't have is the spectrogram.

6 • The Birdfox Recorder app

With the Batmic the app is not an extra: it is half the product. Without it you can record bats; with it you **hear them and see them**, and that changes everything you can do with them.

It is **free**, for **Android 7.0 or later**. Put it in **Batmic mode** — the first tab along the top — and you get the spectrogram in real time: time runs left to right and height is frequency. Each pulse appears as a vertical mark. A pass is a regular row of marks; a feeding buzz is a tight cluster.

The axis already reads in real frequencies. The capsule divides by ten, and the app compensates: it labels the axis "kHz ×10" and shows you the bat's frequency. You read 45 kHz, not 4.5. You don't have to work anything out.

Adjust the brightness and the contrast

It is the only setting that really matters, and it is worth understanding:

- **With too much brightness**, every pulse is drawn as a tall saturated column, and **you can no longer tell where the bulk of the signal sits**.
- **With too little brightness**, the pulse disappears from the screen altogether.

Adjust it until the pulses show as well-defined marks and you can read where their main frequency sits. Intensity varies slightly between species, but **everything inside the range can be seen and heard**. Bats calling above 80 kHz fall outside the detector, and they won't appear whatever you do with the brightness.

Recording, trimming, adding a photo as a field note and exporting with GUANO metadata are in the **app manual**: birdfox.tech/app

7 • Your first night

Start where you can see them. For your first tries, look for a place where you can make them out with the naked eye, even if it is just flying over a street lamp. That way you can check that the kit works while you get used to it: **bats call almost all the time**, so if you are seeing them, you should be seeing pulses.

When. Late in the afternoon, as the light drops. In the hardest months of winter you won't find them: either they have migrated or they are hibernating.

Where. Around water — ponds, rivers, reservoirs — wherever there are insects. And **street lamps**, which are a feeding station: they draw insects, and the bats come after them.

How to place yourself. Quietly. Once the capsule is on you will hear a few clicks caused by your own voice or by other noises nearby, so talk only as much as you need to. **Put the phone in aeroplane mode:** as well as avoiding interference, it spares you the notifications.

Watch out for insects. Many of them sing at high frequencies that go straight into the detector and fill the screen. If there are any, **keep them behind the dish:** that is exactly what the dish being directional is for.

And then it happens. When a bat calls and is close enough, you will hear a series of clear clicks and the pulses will appear on the spectrogram. The first time, nobody needs it explained to them.

8 • Going back to birds

The same move as in section 4, in reverse: hold it from inside, loosen it with the 8 mm key, change the capsule and tighten it again. **Switch the Batmic Capsule off before you put it away** and, if it is going to sit unused for months, take the battery out.

9 • Care

- **The battery and the board are left exposed.** This is not a piece of kit for the rain: if it starts raining, cover it or put it away.
- If you come back damp, let the capsule air-dry before you put it in its box.
- Don't touch the acoustic window **(8)** and don't try to clean it.
- Keep the capsule you are not using in its box, not loose with the rest of your gear.

10 · If something doesn't work

What's happening	What to check
The led doesn't blink	The switch (4) at ON · the battery in properly, with the "+" up and the clip (10) holding it · flat battery
No sound at all	Almost always that is normal: most of the time there is nothing to hear. Only worry if you can see bats going past nearby and you neither hear nor see pulses on the screen
You see bats but there are no pulses	The switch (4) at ON and the led blinking · the jack pushed all the way in · the volume on the interface or the recorder
A click every time I speak	That's normal, your voice has high components too. Talk less and move away from hard surfaces
The screen fills up with continuous marks	Those are insects. Move so you leave them behind the dish
I see the pulses but I can't make out the frequency	Turn the spectrogram brightness down in the app
I record but I hear nothing while recording	You are on the phone with an ordinary adapter. Without the audio interface or the Batmic GO splitter there is no way to listen

If none of that fixes it, write to us at info@birdfox.tech. The people who make the thing are the ones who answer.

11 · Safety

- Do not expose the product to rain or damp.
- Use only 3 V **CR2032** batteries.
- **Keep the battery out of the reach of children.** A swallowed button cell is a medical emergency: go to a medical centre immediately.
- Do not try to recharge the battery, do not puncture it and do not throw it into fire.
- Take the battery out if you are not going to use the capsule for a long time.

12 · Warranty, conformity and disposal

Warranty. If you bought from us directly at birdfox.tech, you have **3 years** of legal guarantee of conformity from delivery. If you bought from a shop in your own country, that country's legal guarantee applies, with a minimum of 2 years in the European Union, and you must go to that shop first.

Conformity. This product carries the **CE marking**. The EU declaration of conformity is available at birdfox.tech or by writing to us.

Disposal. This product and its battery must not be thrown out with household waste. Dispose of them in line with your local electronic waste and battery regulations.

Specifications

PRINCIPLE

Frequency division $\div 10$ with pulse generation.

LISTENING RANGE

20 – 80 kHz. Species calling above that fall outside.

POWER

CR2032 button cell, included and not fitted.

BATTERY LIFE

Up to 80 hours.

INDICATOR

Led that blinks every 2 seconds while the unit is on.

CONTROLS

ON-OFF switch. No other setting: no gain, no modes, no tuning.

OUTPUT

Female 3.5 mm TRS jack.

FIXING

Threads onto the Birdmic dish, 8 mm key · female 1/4" thread for tripod or mount.

WEIGHT

21 g without battery · 24 g with the battery in.

COMPATIBILITY

Any Birdmic dish, ONE or PRO.

APP

Birdfox Recorder, free, for Android 7.0 or later.

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