



# nhbs *BUYER'S GUIDE*



Highlighting the very best conservation equipment

## ACTIVE BAT DETECTORS



**Echo Meter  
Touch 2 Pro**



**Magenta Bat 5  
Bat Detector**



**Batbox Duet  
Bat Detector**



To view our full range  
of active bat detectors, visit

[www.nhbs.com](http://www.nhbs.com)

### INTRODUCTION

There are 18 species of bat in the UK, 17 of which are known to breed here – bats make up almost a quarter of all our mammal species. Watching these elusive nocturnal creatures is a fascinating pastime, but to really immerse yourself in understanding this group, it is worth investing in a dedicated bat detector.

Although not blind – bats in fact have good low-light vision – they do have very sensitive ears and a very sophisticated method of hunting and navigating in the dark by using a process known as echolocation. This involves emitting high frequency sound pulses through their mouth or, in some species, their nose. These sounds bounce off objects in the environment and the bats' finely tuned ears pick up the returning echo. Bats use this acoustic information to detect obstacles while in flight, foraging for food and finding their way back to roosts.

Bat echolocation calls are mostly in the ultrasonic range of 20–200kHz, which is above the range of human hearing (our hearing usually tops out at roughly 20kHz). This is where a good bat detector comes in. All bat detectors have a built-in microphone specially designed to pick up these ultrasonic calls, which are then passed through the detectors circuitry where the calls are processed so they can be either listened to in real time (often by reducing or slowing down the high frequencies to bring them into the range of human hearing) or saved for later analysis using specialised software. How this is achieved varies depending on the type of detector used. Different species have different call characteristics and the information outputted by the detector can be used to distinguish between them.

In this guide, we will focus solely on handheld, otherwise known as active, detectors and we will discuss the different types of active detectors available in our range – understanding the different ways each type processes and outputs the ultrasonic signal is key to picking the right one for your needs.

## TYPES OF DETECTORS AND KEY FEATURES

### Heterodyne

This is a tuneable detector ideal for beginners. Using a dial on the front of the detector, the user sets the frequency range to listen to (e.g. 50kHz). Bat calls at that frequency are then picked up by the microphone and mixed with the circuitry inside the detector which then outputs an audible signal through headphones or a built-in speaker within the human hearing range. Think of it like manually tuning an old radio. The heterodyne process enhances the tonality of the call, resulting in a rich listening experience full of distinctive textures. For this reason, heterodyne is often the preferred method of listening and is often still a selectable listening method on some of the more sophisticated detectors discussed later.

Frequency information is usually provided via an LCD screen, which can then be used to identify different species. As several species call at similar frequencies, it can be difficult to be wholly accurate, therefore it is often necessary to use other visual and behavioural clues to make an estimation of the species.

### Best sellers

Popular models in this range are the Magenta Bat 4 and Bat 5, the only difference between the two being that the 4 has the frequencies written on the dial whereas the 5 has an LCD screen.

The main drawback with a heterodyne detector is that it is only possible to listen to one frequency at a time, so it is possible to miss species if they pass calling at a frequency the detector is not tuned to. Heterodyne signals are also not used for analysis software and are often used for listening purposes only.



**Magenta Bat 4  
Bat Detector**

**#171848**



**Magenta Bat 5  
Bat Detector**

**#171849**

**Elekon  
Batscanner  
Bat Detector**

**#194636**



To get round this disadvantage, models such as the Elekon Bat Scanner and Bat Scanner Stereo scan all frequencies and automatically tune the detector.



**Elekon  
Batscanner  
Stereo**

**#218426**

### Frequency division

Frequency division detectors do not need to be tuned like their heterodyne equivalents; they are broadband detectors, meaning they scan the entire frequency range that bats are likely to be calling in. When a call is picked up, the detector will automatically tune to the loudest call and display the peak frequency on a built-in screen (if the detector has one). The circuitry inside these types of detectors works by dividing the call by a factor of ten, thereby bringing the sounds into the range of human hearing. This method does not preserve the tonality of the call as much as heterodyne, making identification via listening a little trickier, but calls can be recorded onto a sound recorder for later analysis with bioacoustics software.



For the more affordable detectors in this range, it is necessary to buy a separate audio recorder like the **H1n Handy Recorder** as well as a **3.5mm to 3.5mm Jack Cable Lead** to save the calls.

**3.5mm to 3.5mm  
Stereo Jack to  
Jack Cable Lead**

**#176857**



**H1n Handy  
Recorder**

**#248200**

**Best sellers**

**Batbox  
Baton Bat  
Detector**

**#177263**



Popular models in this range include the **Batbox Baton Bat Detector**, which is an ideal beginner frequency division detector. It has a simple one-button operation and comes with a free analysis software.

Alternatively, the **Batbox Duet Bat Detector** is a frequency division detector with a built-in heterodyne circuit, so it is ideal for listening and recording simultaneously.

Both detectors will need the above-mentioned audio recorder.



**Batbox Duet  
Bat Detector**

**#175132**

**Active full-spectrum detectors**

Full-spectrum detectors are some of the most sophisticated detectors on the market. These are broadband detectors that record calls at their original frequencies, meaning they produce high-quality files suitable for precise sound analysis techniques or auto-ID software. Most full-spectrum detectors also allow for playback in other modes such as frequency division or heterodyne, as the full-spectrum method does not convert the calls into the human hearing range.

Technological developments have made full-spectrum detectors much more affordable in recent years.

**Best sellers**

Popular models in this range include the **Echo Meter Touch 2** – essentially an ultrasonic microphone module that turns your phone or tablet into a bat detector. Simply download the associated app, plug in the module and hit record. As well as several different listening methods, the software displays real-time sonograms and an inbuilt algorithm will suggest the most likely species.

Full-spectrum detectors tend to produce large files and so a triggering system that records only sounds above a certain frequency and amplitude is often used.

It is important to check your device is listed on the **compatibility list** and that you have the correct USB port for connection (USB C, **adapters are available**).



**Echo Meter  
Touch 2**

**#177263**

For consultants or bat workers, the **Touch 2 Pro** has some advanced settings such as adjustable gain settings and sample rates.

For iOS users, the **Pettersson U-series USB Ultrasonic Microphone** functions in a similar way to the Echo Meter and will work on both iOS and Android devices but does not have the auto classifier functions of the Echo Meter.



**Echo Meter Touch 2 Pro**  
#255962



**Pettersson U-series USB Ultrasonic Microphone**  
#248984

### FURTHER READING FROM NHBS

For more in-depth reviews of some of the detectors mentioned above, please see the following links:

**NHBS In The Field: Batbox Baton Bat Detector**

**NHBS In The Field: Echo Meter Touch 2**

**NHBS In the Field: Pettersson U-series USB Ultrasonic Microphone**



**Hand-Held Tally Counter**  
#183511



**Petzl Actik Core Headtorch**  
#247731



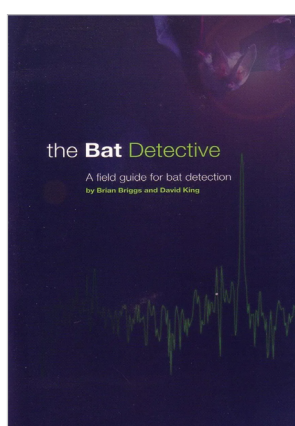
**Rite in the Rain Side Spiral Notebook (Maxi)**  
#207764

### ACCESSORIES

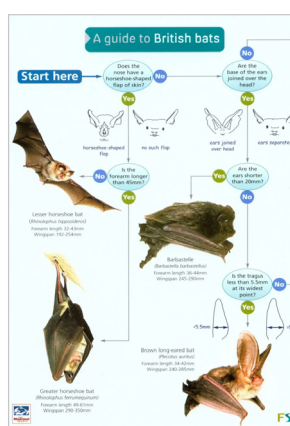
### SUGGESTED READING



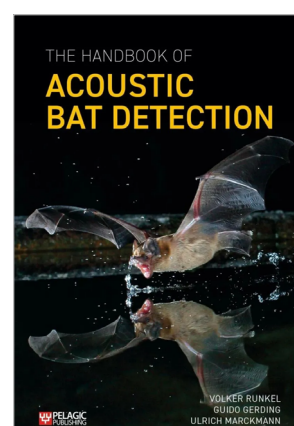
#181961



#79534



#129064



#251861

Explore the complete range of bat detectors on our website. If you have any questions about our range or would like some advice on the right product for you, then please contact us via email at [customer.services@nhbs.com](mailto:customer.services@nhbs.com) or phone on **01803 865913**

