

Pawvbeat Research Kit

Multi-biosignal acquisition on unshaved, freely moving animals. EMG, ECG and EEG from real electrodes: dry contact, no shaving, no sedation, no implant. On the evidence gathered in our competitor review to August 2026, no competing product in this category carries a biopotential front end that touches skin.

A 2025 systematic review found only 22 non-invasive canine EEG studies in history and named signal quality as the bottleneck (Kulgod et al., BMC Veterinary Research 2025, 21:73). This kit was built to remove it.

Research collaborations. Royal Veterinary College (2 labs, under NDA, scope still being agreed). University of Cambridge (paper in preparation). ZSL (pilot conversations ongoing). UCL (collaboration, scope not yet specified). None of these is an endorsement of the kit, and no independent validation of the kit has been completed.

SIGNAL STATUS

EMG	Clearly readable from surface electrodes on awake cats in an internal n=10 cat pilot. This is the demonstrated signal.
ECG	Supported by the hardware. Not yet recorded with correct electrode placement, so we make no claim about it.
EEG	Supported by the hardware. Not usable on awake cats in the same pilot, and dropped from the default electrode harness.

SYSTEM SPECIFICATION

Channels	4 differential biopotential channels (EMG / ECG / EEG, software-selectable) + 6-axis IMU + temperature
Analog front-end	Texas Instruments ADS1299, 24-bit
Sampling rate	250 SPS to 16 kSPS per channel, configurable
Resolution	24-bit
Electrode contact	Dry-contact on unshaved fur, sustained on freely moving animals; no shaving, no sedation, no implant
Contact impedance	Per-channel contact impedance is logged alongside the signal, so every recording carries its own quality annotation. Electrodes are not supplied; the figure you get depends on the cup and paste you use
Processor / wireless	Nordic nRF52840, Bluetooth Low Energy 5; typical indoor range on the order of 10 m
Motion	Bosch BMI270 6-axis IMU, synchronised to the biopotential clock
Battery	Configuration-dependent; stated in your written quote
Weight	Configuration-dependent; stated in your written quote
Data formats	BDF (the 24-bit variant of EDF) at the archival boundary; LSL for research-mode streaming; per-channel contact-quality flags carried in the packet. Specified formats, tooling in development
In the box	Acquisition board, enclosure, six-lead set, starter set of silicone mount pieces and snap holders, placement card, case. Electrodes are not supplied
Intended use	Research use only

MOUNT PIECES AND SNAP HOLDERS

Thin silicone pieces, a bar, a Y and an X with a hole at every arm end, snap together into whatever electrode layout the animal in front of you needs. The white two-part holder that pins two arms together has a slot in its base, and a standard 10 mm gold cup on a 1.5 mm DIN lead slides in sideways so its face sits on the skin. Every joint is an electrode site, or a blank one. A kitten and a Labrador use the same parts in different counts. Electrodes come from your usual supplier. Patent pending in the US.

DATA FORMATS AND SDK

Data leaves the device in open, documented formats. BDF, the 24-bit variant of EDF, is specified as the archival format because it matches the 24-bit front end and opens in the EEG analysis tools labs already run. LSL (Lab Streaming Layer) is specified for research-mode streaming and multi-device synchronisation. Per-channel contact-quality flags are carried in the packet alongside the samples, so quality annotation is part of the record rather than a separate file. No cloud account is required for raw data access.

These are the specified formats and the intended design. The SDK and its converters are in development and there is no public package to download yet. Documentation is public and ungated at pet-lepathy.com/docs; ask us what is implemented today before you plan a study around it.

EVIDENCE

Six IEEE EMBS abstracts (2024-2026), first-author on four; three manuscripts in review; a paper in preparation with the University of Cambridge. Patent pending: mount, holder and headband are covered by US provisional applications. Ethics review in progress.

ORDERING

Pricing	Current pricing and a written configuration quote: pet-lepathy.com/research . Pricing lives on the website rather than in this document so that the figure you read is the current one
Configuration	Tell us the species, the signals you need and sessions x animals. Written configuration and quote within 48 hours; quotes are stable for grant budgeting
Electrodes	Not supplied. The holder takes a standard 10 mm cup on a 1.5 mm DIN lead
Collaborations	Scoped per engagement; co-designed studies
Contact	cathyahn4u@pet-lepathy.com · pet-lepathy.com/research