



Wireless Telemetry

by Open Source Instruments

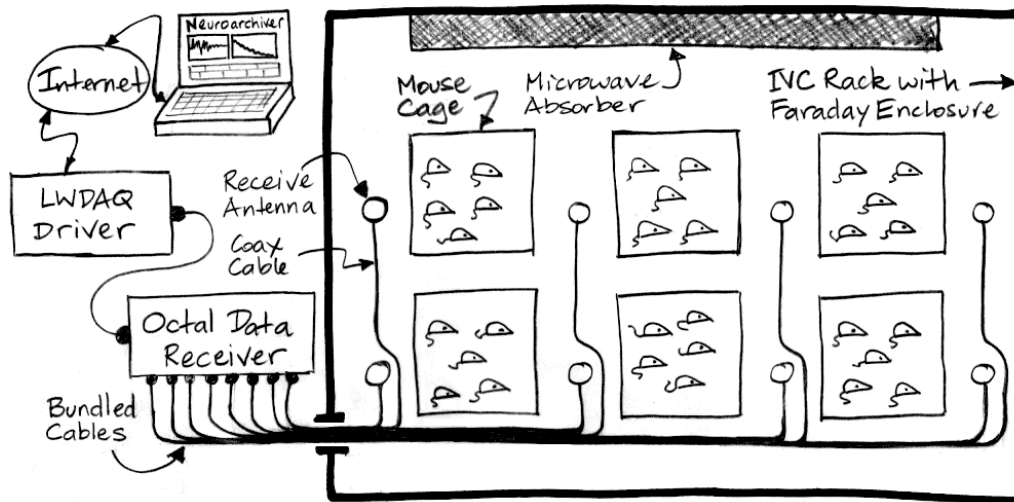
24-7 Recording of Cohabiting Animals

Capability

Open Source Instruments' [wireless telemetry system](#) provides **continuous recording** of biopotentials from freely-moving, cohabiting animals. Biopotentials are low-pass filtered but otherwise **undistorted by digitization and transmission**. The fidelity of the signal, combined with OSI's event-detection software, allows researchers to **identify rare events automatically** in tens of thousands of hours of recordings, or to detect events automatically as they occur. All hardware and software is **well-documented and open source**. Software and software updates are free.

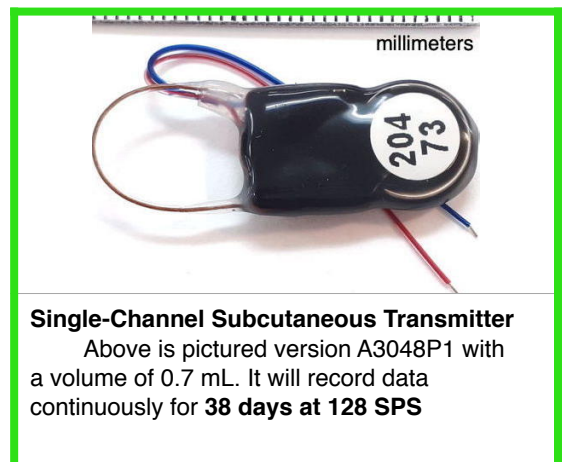
Overview

Subcutaneous transmitters are surgically implanted in rats, mice, or mouse pups. When turned on with a magnet, the transmitters broadcast biopotential measurements to be viewed in real-time or recorded for future analysis. The system can be used in an IVC rack or on a bench top. A single recording system, which costs under \$20,000, will record **continuously** from up to 40 animals.



Transmitters are implanted in the abdominal cavity of the rodent. Subcutaneous leads connect the transmitter to [electrode screws or depth electrodes](#) mounted on the skull, which provide fully-subcutaneous telemetry in cohabiting animals.

- Smallest version 0.7 mL
- No operator supervision required
- One to four data channel models
- Magnetic on/off switch
- Sample rates up to 2048 SPS
- Bandwidth up to 640Hz



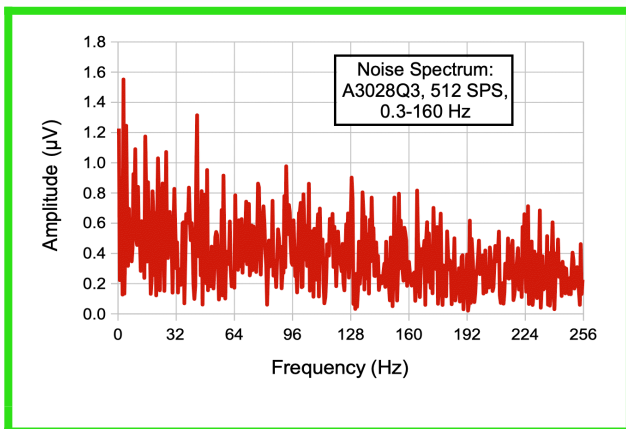
Set-Up

There are two paths to setting up a telemetry system. Each transmitter is \$600. Our [price list](#) is online.

1. Using our Telemetry Control Box (TCB-A16) – with 16 antennas, this system can record from two IVC racks. System set-up ~\$16,800 USD
2. Using our Animal Location Tracker (ALT) – with enclosed antennas and a single ethernet cable, which also provides power. The ALT provides activity and proximity monitoring of animals in addition to biometric recording. System set-up ~\$15,300 USD

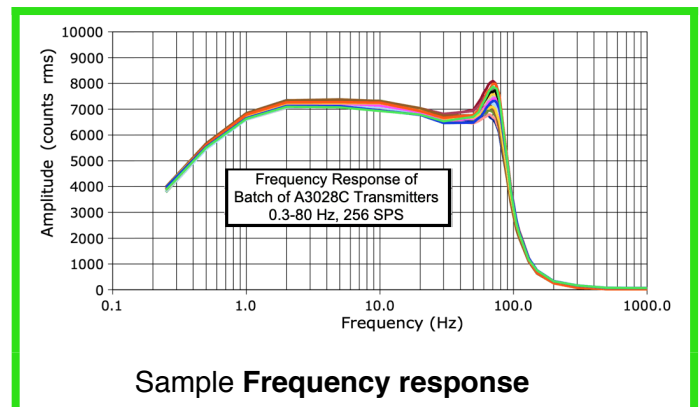
A [Faraday enclosure](#), or radio quiet chamber, is required when using OSI telemetry. We offer a bench-top enclosure that can hold up to six mice cages, or a Canopy that is large enough to enclose an IVC rack.

Data Quality



Biopotentials are low-pass filtered, but are otherwise **undistorted by digitization** and transmission. When electrodes are well-secured, EEG signals will be free of movement artifact.

Our instruments' performance is fully characterized. We guarantee reception from active animals.



- Total Noise **less than 8 µV rms** (measured at 0.3 - 160 Hz)
- Mains hum noise **less than 1 µV** (60 Hz noise source in USA)
- No device-generated movement artifacts
- Frequency response provided along with each transmitter
- **Guaranteed reliable reception from active, cohabiting animals**

| Sampling of Subcutaneous Transmitter Versions | | | | | | |
|---|-------------|-----------------------|-------------------|--------------------|----------------|----------|
| Version | Volume (mL) | Operating Life (days) | Sample Rate (SPS) | Number of Channels | Bandwidth (Hz) | Mass (g) |
| A3048P1 | 0.7 | 38 | 128 | 1 | 0.3-40 | 1.5 |
| A3049A3 | 1.2 | 14 | 512 | 2 | 0.3-160 | 2.2 |
| A3049C2 | 1.2 | 38 | 256 | 1 | 0.3-80 | 2.2 |
| A3047A2B | 2.6 | 72 | 256 | 4 | 0.3-80 | 6.8 |
| A3049E3 | 2.6 | 132 | 512 | 1 | 0.3-160 | 5.8 |
| A3049Q3 | 4.5 | 155 | 512 | 2 | 0.3-160 | 8.8 |