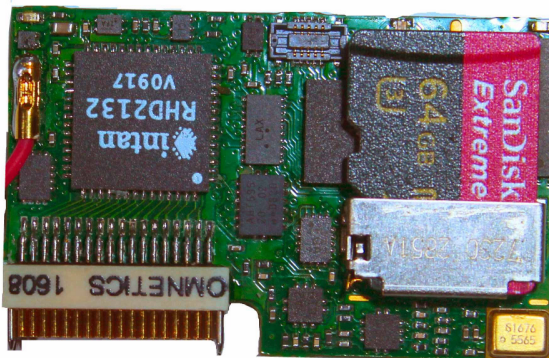


SpikeLog64 Specification Manual



This document provides specifications and instructions that are specific to the SpikeLog64 neural logger. General instructions for use of Deuteron’s neural loggers and related software is available on Deuteron’s website www.deuteron-tech.com

General description

SpikeLog64 is a single board neural logger that provides 64 channels of neural recording. It also can record audio and ultrasonic signals using its on-board microphone or from an external transducer. A 9-axis motion sensor can be used to record motion and direction.

Basic capabilities

Function	Properties	Detail
Presentation	Single circuit board, vertical orientation	No standard housing
Neural recording	64 channels	32000 samples per second
Audio / ultrasonic recording	Optional. 1 channel, up to 80kHz bandwidth	50K, 100K or 200k samples per second
Motion sensor	Optional. “9-Axis”; 3D-accelerometer, 3D-gyroscope and 3D-magnetometer	Gyro and accelerometer: 1000 samples per second per axis. Magnetometer: 110 samples per second per axis
Data recording	To removable MicroSD card	Cards up to 512GB are supported
Wired data streaming	None	
Radio data streaming	Preview only	Limited to about 100Kbytes per second

Specifications

File formats

If configured for neural data only, Deuteron's "Flat" file format can be used. Systems that support motion sensor recording, audio recording, or both use deuteron's "block" file format.

Neural Recording

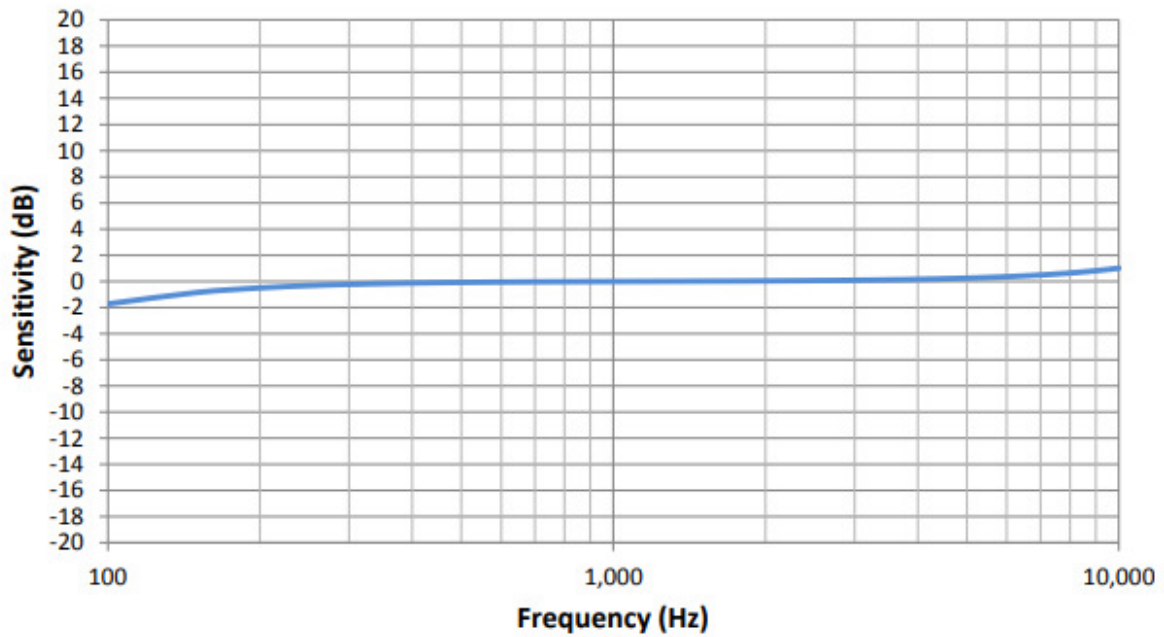
Function	Properties	Detail
Signal range	10mV p-p	
Digital resolution	0.2 μ V	
Random noise	2.4 μ V	For 7kHz bandwidth
Input capacitance	15pF	
Preamplifier bandwidth	Low limit :0.2 to 500Hz High limit: 200Hz to 10kHz	Fully software selectable
Analog filters	Low-pass: 3 rd order. High-pass: 1 st order	
Sampling rate	32000 samples per second, each channel	Fixed sampling rate
Connector	Pair of Omnetics A79025-001	Spacing between connector center lines is 2.69mm
Reference channels	Ground is the default reference, but any channel can be selected to be a reference channel.	There are two banks of 32 signals. The voltage of the selected reference channel is subtracted from all the channels in that bank before the signals are amplified

Audio Recording

Function	Properties	Detail
On-board sensor	Knowles SPU0410LR5H-QB	Sensitive beyond 80kHz
Audio bandwidth. Upper limit	10kHz, 20kHz, 40kHz, 80kHz	One of thee 4 options is selected prior to starting a recording
Audio bandwidth, Lower limit	150Hz, 1kHz	Two options exist. These can be customized when ordering. Some researchers use 4kHz minimum
Audio sampling rates	50kHz, 100kHz, 200kHz	Logger must be restarted after changing sampling rate
Preamp sensitivity	High sensitivity: 60 μ Pa/bit (5dBA per bit level) Low sensitivity: 4mPa/bit (13dBA per bit level)	16 bit range is 80dBA 16-bit range is 88dBA
External sensor bias voltage	3.3V	

Spectral response of microphone in audio and ultrasonic ranges as characterized by Knowles.

**Typical Free Field Response
Normalized to 1kHz**



**Preliminary Ultrasonic Free Field
Response Normalized to 1kHz**

