Welcome to JAGA systems

v.2e 2012-2017

Welcome to our JAGA systems (www.jinga-hi.com). JAGA devices are coin sized wireless neural recording devices.

Our device is all in one unit! That means our each device contains amplifier, filter, digitizer, microcontroller and transmitter all in one unit. All you need (once you power the device with a battery and set up the receiver) is *plug and measure*. We provide a brief comparison of our products JAGA16 and JAGA Penny below.

1. JAGA16

- 23mm x 33 mm x 6 mm (6.0g) (except battery)
- 16 channels of unit recording at15/30kSps or 16 channels of EEG at 1kSps
- Battery with additional weight 1.1/5.6/12/24 g can be attached to the headstage/back for recording hours of 0.5/1.5/3/6 hour of recording. Upto 4 channel LFP, the battery hour can be doubled from above.
- Signal range ~ 30 m
- Millmax connector (Omnetics/Millmax adapter provided if needed)

2. JAGA Penny

JAGA penny is designed to be light- weight suitable for neural recording on mice or light mobile applications. Currently at beta testing and the size of the final device may be smaller than this.

- 24mmx15.4 mm x 3mm (1.9g) (except battery)
- 4-8 channels of unit recording at 10/20kSps or 16 channels EEG 1kSps

- Battery with additional weight 1.1/5.6/12 g can be attached to the headstage/back for recording hours of 1.5/10/24 hour of recording. Upto 2 channel LFP, the battery hour can be doubled
- Signal range ~ 1-2 m
- Omnetics connector (Omnetics/Millmax adapter provided if needed)

NOTE: Both devices come with receiver, batteries Qt.5, battery charger. EIB boards can be provided if needed at cost.

3. Software

JAGA Basic software option:

- Basic display (jaga_display.py Python codes for JAGA16, penny_display C/C++ for jaga penny)
- basic display/data save on Mac/Linux/Windows is provided.
- Users need to generate own timestamps for data using our codes that are provided.
- Users can have full access to our codes upon request. Non-proprietary data ouput. Our matlab file can convert acquired data into a .mat form (with neural recording data with timestamps) or in .txt or .csv format.
- The code renders only raw data at hardware acquisition sampling rate *without* spike identifying/sorting algorithms. You will need your own means to analyze your data.
- We are also working to make our data format importable for other open source program.
- We encourage users to actively contribute to the codes because they are free and open.

GUI software option:

NeuroPhys Visualization software This GUI software provides a nice and fancy visualization.

- Displays and saves upsampled data (x 2 of hardware sampling rate)
- Provides on-line spike identification.
- Provides DC offset removal from our hardware
- Options to remove movement artifacts that can be happen *in vivo* recording.
- The data output can be .plx or raw data output .DAT. .PLX and can be imported into Plexon, Matlab and NeuroExplorer. plx can be further imported into matlab files to generate .mat for time series data for each channel.

NeuroSorter Analysis software This GUI software is very similar to Plexon offline sorter.

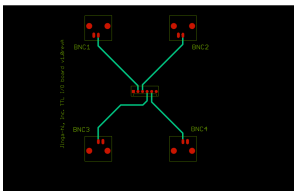
- Provides off line spike identification & classification based on sophisticated PCA algorithms.
- Can be further imported into NeuroExplorer.

NOTE: For EEG applications, our GUI software provides a fancy visualization and the capability for importing the data into matlab arrays. We do not currently have sleep analysis tools.

4. Accessories:

Adapters: We provide various adapters that can interface with your electrode connectors
TTL/in-out: We provide a TTL/in-out board with which you synchronize your neural recording
Batteries: We use Lithium Poly batteries that are rechargeable.
A:1.1 (25mAh)/B:5.6 (250mAh)/C:12(500mAh)/D: 24 g(1200mAh) can be used in the followings.
A: headstage for rat/mice B:waist on mice/headstage for rat C:waist on rat/headstage for monkies D: monkeys

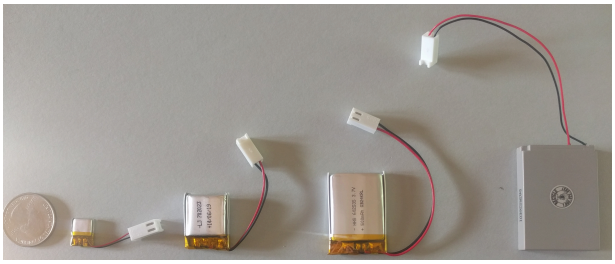
FTDI adapter



USB port

TTL in/out board

A B C D



Batteries

5. Pricing: Please ask us about various options for pricing.

- JAGA16 hardware + JAGA basic software option:
- JAGA16 hardware + GUI-software display option+ JAGA basic software option:
- JAGA16 hardware + GUI-software display/analysis option+ JAGA basic software option:
- JAGA penny hardware + JAGA basic software option:
- JAGA penny hardware + GUI-software display option+ JAGA basic software option:
- JAGA penny hardware + GUI-software display/ analysis option+ JAGA basic software option:

NOTE: Shipping and tax separate. NOTE: A discount may apply for additional devices.

NOTE: For JAGA basic software (open-sourced) option: We don't provide any software service. We recommend that you use this version if you are comfortable with programming. If you still want the basic option, we highly recommend you purchase JAGA hardware + GUI software display option. That way, we can still provide software service.