

# APOLLO™



Bio-Signal  
Technologies

*Apollo* is an inexpensive, high-performance data acquisition (DAQ) system for animal neurophysiology experiments using up to 32 electrodes. Its user-friendly software and plug & play hardware provide scientists and engineers with a sophisticated yet easy-to-use neural DAQ system. The *Apollo* digital signal processor and software acquires, processes, and analyzes physiological signals (e.g., spikes, field potentials) together with experimental events from third-party equipment including behavior, stimulation, and video systems. Stereo audio output allows for real-time monitoring of neural signals using headphones or speaker. A battery-power mode eliminates inadvertent ground loops to ensure high signal-to-noise recordings even in the most demanding EMF noise environments.

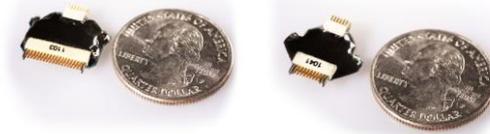
## Example Applications

- Basic Neuroscience
- Drug studies
- Neurophysiology training
- Surgery monitoring
- Neuromarketing



Apollo DAQ System

**Miniature & Lightweight Headstages**  
(ideal for large & small animals such as non-human primates, birds & mice)



32 channels

16 channels

## Apollo Digital Signal Processor

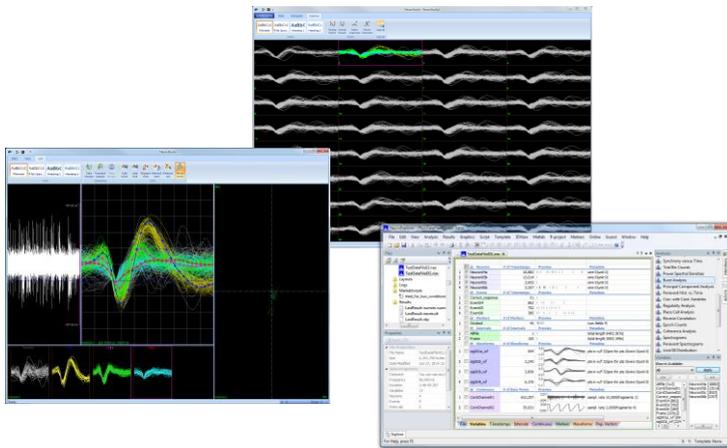
- Ultra-compact design
- 32 electrode channels for recording
- User-defined digital filters
- 2 digital inputs
- Stereo audio output
- Battery-power option (line-noise immunity)

## Miniature Digital Headstage

- 16/32 channels
- Onboard digitization (30 kHz, 16 bits)
- Wideband recording
  - ✓ Spikes
  - ✓ Field potentials
- Multiplexed, 12-wire LVDS cable
- Miniature size & ultra lightweight
- *In situ* impedance measurement
- Red & green LEDs for animal tracking
- 3-axis accelerometer for dynamical analysis

## World's Smallest Digital Headstage!

Our digital headstage provides a miniature, high-fidelity neural link. The onboard analog filters and digital circuitry facilitate a stable and noise-immune link to the brain. The multiplexed output allows just a few wires to carry signals from up to 32 electrodes making it ideally suited whether recording from small animals such as freely-behaving mice or non-human primates (NHPs). The headstage front end is compatible with individual microelectrodes, microelectrode arrays, microwire / optrode arrays, silicon probes, and subdural cortical (iEEG/ECoG) grids. We offer a wide range of headstage cables with lengths up to 10 m and wraps optimized for biting protection and transmission of rotational torque to commutators for freely-behaving subjects.



## Software

- User-friendly GUI (interface)
- Multichannel signal displays
- 2D/3D PCA analysis
- Manual & auto spike sorting
- Stereotrode & tetrode support
- Multiple data format support
- MATLAB/C/C++ SDKs

## Powerful & User-Friendly Software

Digital Headstage	Apollo Digital Signal Processor
Input Channels: 16/32	Headstage Recording (R) Channels : 32
Input Connector: 18/36 pin, Female Omnetics (16/32)	Headstage R Ports: 1 (aviation connector)
Size (L x W): 12mm x 15mm / 14mm x 15mm (16/32)	Size (L x W x H): 200mm x 230mm x 50mm
Thickness (H): 2mm / 2mm (16/32)	Digital Input: 2 TTL (BNC)
Weight: < 0.6g / < 0.8g (16/32)	Audio Output: stereo line level (3.5mm jack)
Noise: 2.4 $\mu$ V RMS (typical)	Audio Output Filter: selectable DC or 300 Hz high pass
Resolution: 0.25 $\mu$ V	PC Interface: USB 2.0
Input Impedance: 1.3 G $\Omega$ @ 10 Hz, 13 M $\Omega$ @ 1kHz	Power Supply: switchable 5 VDC or 110-240 VAC
Input Range: $\pm$ 5mV	
Sampling: 16 bits @ 30 kHz	
Bandwidth: 0.3 Hz (1p) – 7.5 kHz (4p)	
Output Cable (LVDS): 12 wires, length to 10 m	
Power Supply: 3.3 VDC	
Tracking LEDs: red & green, selectable on/off	