

## APEX

## WEARABLE EEG SYSTEMS AND HEADCAPS

### WEARABLE SYSTEMS

APX-SYS24

APX-SYS32

### EEG HEADCAPS

#### 24-CHANNEL

- APX-24CAP-S
- APX-24CAP-M
- APX-24CAP-L

#### 32-CHANNEL

- APX-32CAP-S
- APX-32CAP-M
- APX-32CAP-L



APEX is a wearable, user-friendly EEG device that delivers high-quality 24- or 32-channel signals for gathering exceptional research data in a variety of settings and conditions. Record high-quality EEG signals using a wired or wireless connection. The APEX device is also a data logger for complete portability and remote data collection. APEX captures full-band EEG characteristics with an analog bandwidth DC to 350 Hz. Reference channels can be customized, from all channels (average) to a single channel. APEX Systems are fully integrated with *AcqKnowledge*—the *AcqKnowledge* software receives the APEX LSL data stream via the included LSL license (see below). Use APEX as a stand-alone system with *AcqKnowledge* or combine with an MP160 Research System to add other physiological signals and measurements.

### User-friendly Features

APEX features an intuitive physical user interface design. LED lights show the stability of the headcap and PC connection and indicate recording status and battery life. Buttons allow the user to power the device on or off, mark events, and start and stop recording. Key features include the following:

- Active Shielding Technology
- (Live) Impedance Measurement
- Full integration with *AcqKnowledge* software
- Marker button
- Trigger input
- Configurable references
- Wired data transfer
- Wireless data transfer (via Bluetooth dongle)
- Onboard 32 GB storage (up to 50 recordings)
- Typical battery life of 4 hours (possibility to extend with a certified powerbank)



### Each APEX EEG System Includes the Following:

- APEX amplifier (24 or 32-channel)
- APEX User Package QR Code Sticker, including PC Driver, User Application, File Viewer, User Manual, and Python GIT Lab
- Participant ground electrode cable
- Set of wristbands for the participant ground
- Bluetooth (BT) dongle
- USB cable
- APEX cradle, including two straps
- *AcqKnowledge* Software license for integrating APEX hardware and utilizing LSL

### LSL Integration for *AcqKnowledge*

APEX EEG Systems include Lab Streaming Layer (LSL) integration for BIOPAC's *AcqKnowledge* software for access to their data streams. The *AcqKnowledge* LSL integration provides real-time access to the data streams from both devices for synchronization, display, recording, and analysis, plus these streams can be combined with any other signals being recorded by BIOPAC hardware. LSL is a powerful framework for real-time data streaming and synchronization. BIOPAC is adding LSL integration to *AcqKnowledge* 5.0.10 and above.

## EEG HEADCAPS

For use with the APEX Wearable EEG System, these gel headcaps provide excellent fit and comfort for recording high-quality, low-impedance EEG signals with minimal movement artifacts. Caps are available with 24 and 32 channels in sizes Small (S), Medium (M), and Large (L).

### Key Headcap Features:

- Excellent signal quality with noise reduction and noise cancelling properties
- Soft silicone electrodes for an ergonomic fit
- State-of-the-art fabric for optimal participant comfort
- Water-repellent material for reduced drying time
- Electrode wires invisible and integrated into the cap
- Durable and hygienic material longer life span



### Headcap cleaning instructions:

Clean the cap after every usage. Remove gel from the measurement electrodes and rinse by hand with warm water. If needed (e.g., in case of dried gel), remove remaining residue soft toothbrush in combination with one of the prescribed cleaning additives (see below). Rinse with warm water to remove remaining gel particles. Disinfect the cap with an isopropyl alcohol (IPA) solution of no more than 70% ethanol to water or with Incidin Foam. Shake the cap to gently to remove excess moisture and let it air dry. Store the cap after usage in a dry location that is not exposed to direct sunlight. Hang the connector higher than the cap to prevent moisture from entering.

|  |                               |
|--|-------------------------------|
| <b>Cleaning additive:</b>                  | BioTex or Ivory Soap          |
| <b>Disinfectant:</b>                       | 70% ethanol to water solution |
| <b>Combined cleaning and disinfectant:</b> | Incidin Foam                  |

### APEX SYSTEM SPECS:

|                                     |   |
|-------------------------------------|---|
| <b>Dimensions and weight:</b>       | 150 mm x 75 mm x 30 mm, 240 g                               |
| <b>Power supply:</b>                | Internal batteries, USB via PC, or certified USB charger    |
| <b>Inputs:</b>                      | 24 or 32 x unipolar, 1 x 4-bit trigger                      |
| <b>Maximum sampling rate:</b>       | 1024 Hz   |
| <b>Resolution:</b>                  | 24 bits   |
| <b>RMS noise:</b>                   | < 1 $\mu$ V   |
| <b>Input range:</b>                 | -150 mV to +150 mV  |
| <b>Input impedance:</b>             | > 2 G $\Omega$ , < 1 pF                                     |
| <b>On-board memory capacity:</b>    | 32 GB   |
| <b>Analog bandwidth:</b>            | DC to 350 Hz  |
| <b>Typical battery life:</b>        | 4 hours (possibility to extend with a certified power bank) |
| <b>Common mode rejection ratio:</b> | 100 dB at 50/60 Hz  |

### EEG HEADCAP SPECS:

|                               |  |
|-------------------------------|--|
| <b>Connection:</b>            | 1.8 meter cable                              |
| <b>Electrode size:</b>        | 4 mm, low-profile                            |
| <b>Electrode composition:</b> | DC stable sintered Ag/AgCl                   |
| <b>Estimated lifespan:</b>    | Tested for a minimum of 200 sessions per cap |
| <b>Recommended gel:</b>       | CAPGEL16 or CAPGEL32                         |

### NOTE:

These products are NOT MRI Safe!

