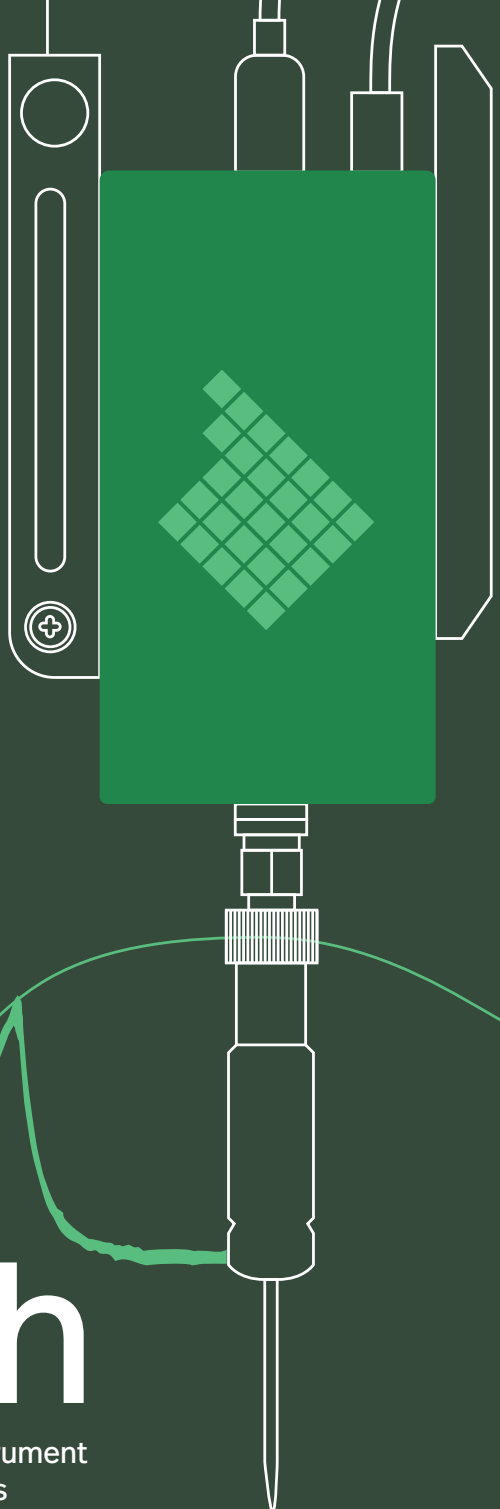
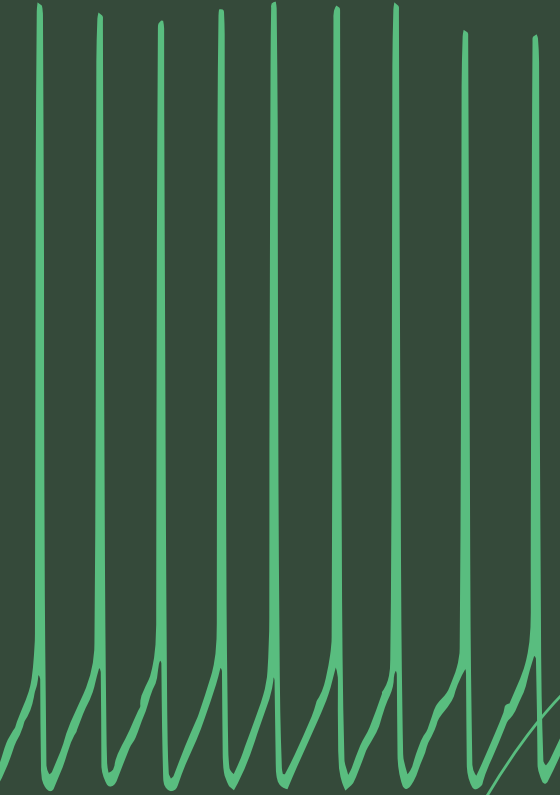




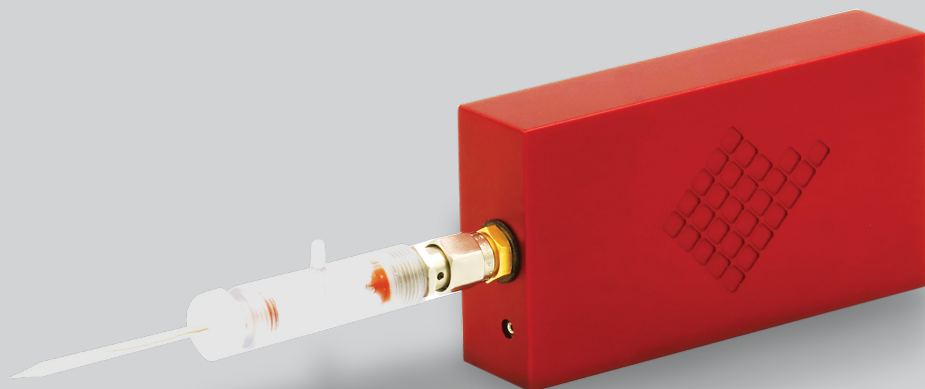
elements

Enabling technologies for Life Science



ePatch

The only all-in-one plug and patch instrument
for high-quality patch clamp recordings



Everything you need inside a compact amplifier

The low-noise amplifier, pulse generator, and digitizer are all included inside the small headstage that is directly mounted on the micromanipulator, and powered by your laptop's USB port. No crazy cables, no amplifier rack, just patch and play!

TECHNICAL SPECIFICATIONS (VOLTAGE-CLAMP)

Open input noise (rms)	300fA @ 625 Hz; 1.5pA @ 10 kHz; 12pA @ 100 kHz
Current ranges	$\pm 200\text{pA}$ (Gain 2.25G Ω), $\pm 2\text{nA}$ (Gain 225M Ω), $\pm 20\text{nA}$ (Gain 22.5M Ω), $\pm 200\text{nA}$ (Gain 2.25M Ω)
Voltage pulse generator range of	$\pm 500\text{mV}$
Digital filters	cutoff frequencies in the range between 625 Hz and 100 kHz
Max sampling rate	200 kS/s
C-fast compensation range	0-11 pF
C Slow compensation ranges	C in 0 - 250 pF, Tau in 0 - 2500 μs
R series correction ranges	R in 0 - 25 M Ω
Pipette offset compensation range	$\pm 50\text{mV}$
0-5 V Programmable Digital Output	

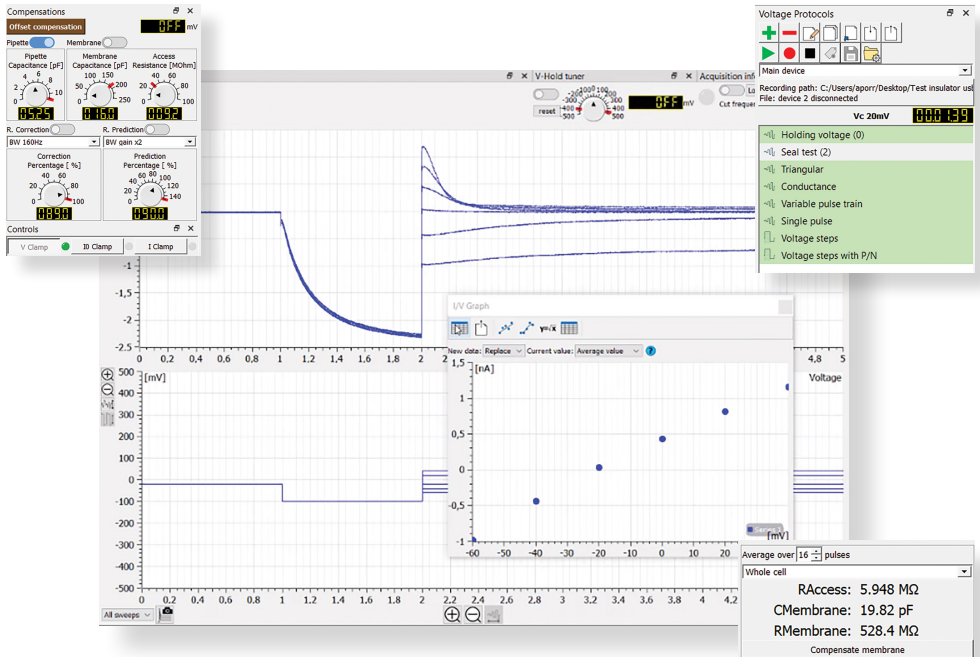
TECHNICAL SPECIFICATIONS (CURRENT-CLAMP)

Noise (rms)	11 μV @ 625Hz; 22 μV @ 10 kHz; 350 μV @ 100 kHz
Current stimulus ranges	$\pm 2.5\text{nA}$ (res. 0.2pA); $\pm 100\text{nA}$ (res. 10pA)
Voltage range	$\pm 700\text{mV}$
Pipette neutralization	(0-31 pF range)
Bridge Balance compensation	(0-40 M Ω range)
True-zero current mode	

| Dovetail or rod bar mounting / Size & Weight: 42 x 18 x 78 mm, 200 g

Pipette capacitance, cell capacitance, and R series are always under control through compensation settings.

Define data collection with a wide set of acquisition tools and commands.



Cm, Rs, and Rm can be continuously monitored during the recording.

EZ Patch software interface

No more buttons and dials! ePatch is operated through the EZ Patch software, a user-friendly interface developed and released by Elements for easy and fast control. But rest assured, all your recordings are compatible with third party analysis software.

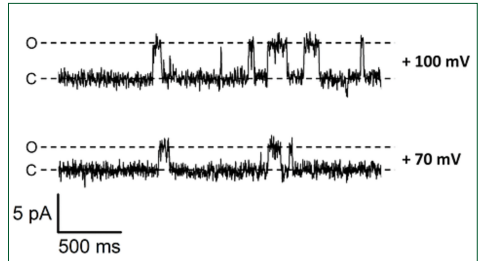
FEATURES

- Customizable, user-friendly Windows and Mac OS interface
- Real-time display of voltage, and current digitized data
- V-clamp, I0-clamp, and I-clamp modes
- Parametric voltage, and current protocols editor
- Automatic or manual control of compensation settings
- Real time monitoring of cell parameters (e.g. Cm, Rm and Rs)
- Resting potential recording in true-zero current mode
- Real-time data analysis in voltage-clamp mode (I/V graph, histograms, FFT, etc.)
- Real-time action potential waveform analysis
- "Store signal" tool to easily compare data during the recording
- Digital LabBook
- Data output saving format: .abf, with more coming soon

Case studies

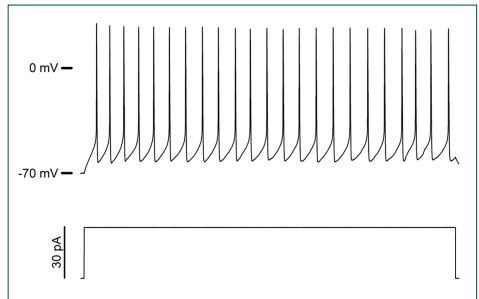
SINGLE CHANNEL RECORDING

Single channel activity measured in cell attached mode from an HEK cell transiently expressing Kcv potassium channel. The closed and opened levels are indicated by a dotted line preceded by C or O, respectively. The pipette holding potential is indicated at the right end of the trace. K⁺ concentration inside the pipette was 130 mM, K⁺ in the bath solution was 100 mM.



CURRENT-CLAMP RECORDING OF CORTICAL NEURONS FIRING

Whole-cell current-clamp recordings of a cortical neuron isolated from neonatal rat brains. The action potentials were recorded by injecting currents of 30 pA for 1 s from a holding potential of -70 mV. Both the pipette neutralization and the bridge balance compensation were applied. Data were acquired at 10 kHz SR and saved in .abf format.



NAV 1.5 CHANNEL RECORDING

Whole cell current of Nav 1.5 channel overexpressed in HEK293 cells elicited using the voltage clamp protocol shown in the inset. Data were sampled at 10 kHz and filtered at 5 kHz. Voltage errors were minimized using the R series prediction and correction compensation tools.

