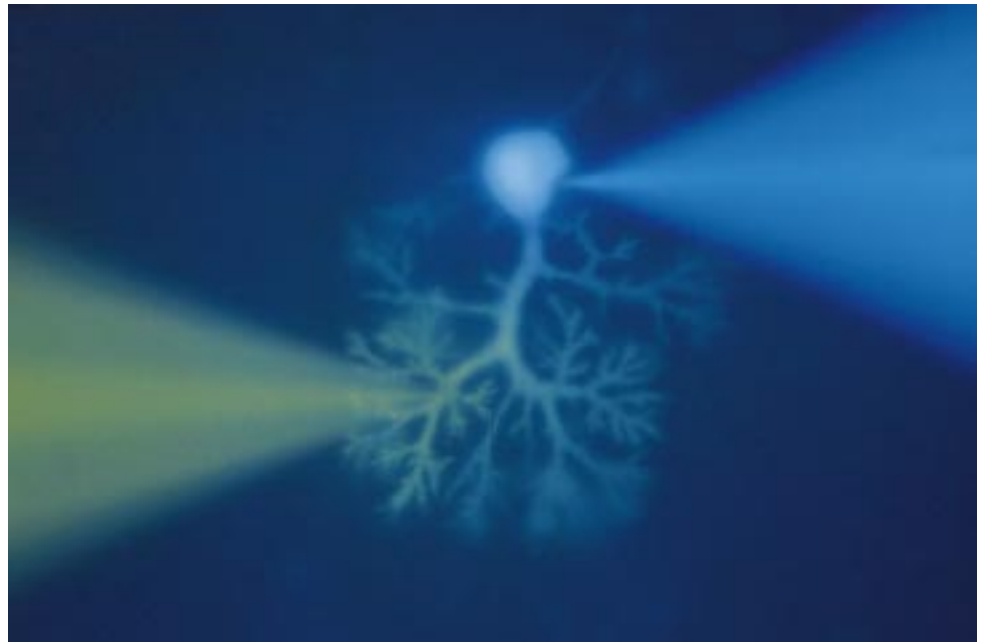


EPC 7 patch clamp amplifier

the classic instrument



*Simultaneous recording with two pipettes from the same neuron.
(G. Stuart, Max-Planck-Institut für medizinische Forschung, Heidelberg)*

If you believe your job is to make new discoveries then...

...discover the classic EPC 7

- High resolution recordings
- Studies of exocytosis (by monitoring changes in cell membrane capacitance)
- Whole Cell voltage clamp and current clamp studies
- Recordings from artificial membranes

Features of the classic EPC 7

- High time resolution and low noise for single-channel and whole-cell recordings
- Range-changing capability of the headstage
- Extremely wide bandwidth available from the Current Monitor circuitry
- Integrated transient cancellation and series-resistance compensation functions



The letters EPC stand for *Extracellular Patch Clamp*, the method introduced by Neher and Sakmann (1976) for recording the currents in a small patch of membrane under voltage-clamp conditions. The EPC 7 represents roughly the seventh in the series of patch clamp designs in use in the Göttingen laboratories of Neher and Sakmann since their initial experiments and produced by HEKA as the first manufacturer of patch clamp amplifiers in the world (EPC 5). In the intervening years a number of technical advances have occurred, most notably the discovery of the "gigaseal" by E. Neher (1981), which have made the words *extracellular* and *patch* excessively restrictive in describing this instrument. The advantage of the "classic" EPC 7 is that intracellular recordings can be made with the same type of recording setup as used for patch recording from the cell surface, and cell-free membrane patches are also used. Since many years the EPC 7 "classic" is manufactured in the same established way. This is a testament to the excellent design of this unique and versatile amplifier.

Head Stage

The input circuitry is contained in a hybrid integrated circuit.

Current measuring resistors:

50 G Ω (high range)

500 M Ω (medium range)

Largest measurable currents:

20 nA (500 M Ω range)

200 pA (50 G Ω range)

Noise measured with 4-pole Butterworth or Bessel filter:

DC to 1kHz: 50 fA

DC to 3kHz: 100 fA

DC to 10kHz: 300 fA

Input connector:

Standard BNC

Other connections:

Ground sense input,

Pipette command output.

Current Monitor Signal

Gain:

0.5 to 1000 mV/pA, switch-selected

Bandwidth:

100 kHz (medium range)

60 kHz (high range)

Current Clamp

Commanded CC:

1 pA/mV input; up to 10nA

Capacitance Compensation

Manual adjustment of the fast and slow capacitance cancellation.

C-fast:

0 to 10 pF, calibrated

0.5 to 5 μ s time constant

C-slow:

0.2 to 10 pF, calibrated

2 to 100 pF, calibrated

Series conductance adjustment:

0.01 to 1 μ S, calibrated

Series Resistance Compensation

Automatically determined from transient cancellation controls.

Rs determination:

0 - 90%

Pipette offset

Manual adjustment of the pipette offset in a range of

\pm 50 mV.

Holding Potential

Hardware controlled holding potential with a total range of

\pm 200 mV.

Filters

The EPC 7 contains two built-in filters for the current-monitor signal. Filter 1 is a 3-pole

prefilter with 10 kHz, Bessel responses. Filter 2 is a 3 kHz,

3-pole Bessel filter.

Noise Monitor Facility

LCD displays RMS current for checking background noise.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

3-pole Bessel filter.

Related Products

PULSE / PULSEFIT

Patch clamp data acquisition and analysis software for Macintosh computers.

X-CHART

Software implemented chart-recorder for Macintosh computers and PowerPC[®].

TIDA

Electrophysiological data acquisition and analysis for personal computers under MS-Windows[®].

PIP 5

Temperature controlled micro pipette puller.

EPC 9

The fully computer controlled patch-clamp amplifier with built-in interface board.

Service & Support

As the first manufacturer of patch clamp amplifiers in the world HEKA knows the needs of scientists. We provide exceptional pre and post sales customer support from our trained international sales representatives and our own technical support advisors. With thousands of high performance hardware and software products in daily use worldwide we understand all aspects of data acquisition systems not just the software. To avoid compatibility headaches you can get everything from signal conditioning and acquisition to analyzing and data backup systems from one supplier, HEKA Elektronik.



HEKA Elektronik
Dr. Schulze GmbH
Wiesenstraße 71
D-67466 Lambrecht/Pfalz
Germany

We reserve the right to effect technical changes as development progresses. Special versions are available on request. Further technical data are provided by a detailed description, which is available on request. A guarantee of one year applies on all instruments.

Phone +49 (0) 63 25 / 80 36
Fax +49 (0) 63 25 / 80 39
Web Site <http://www.heka.com>
Email sales@heka.com
support@heka.com