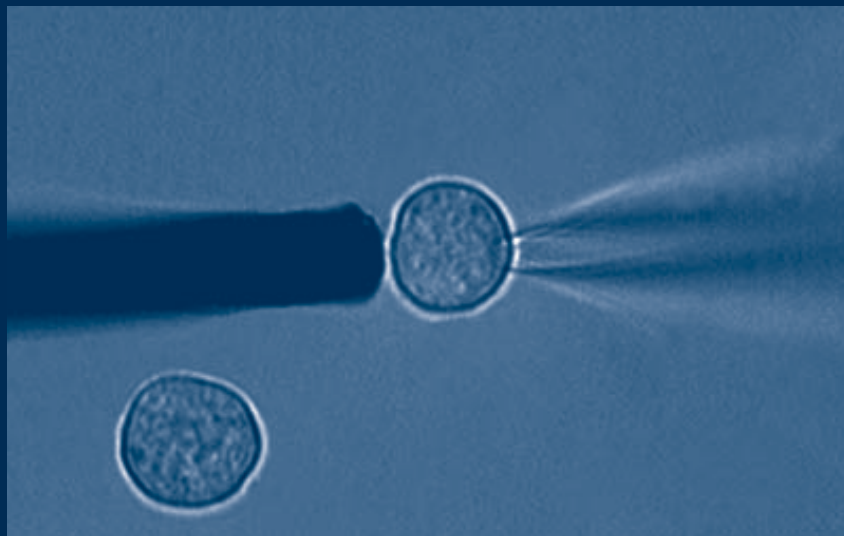




EVA 8

Voltammetric Amplifier



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

...discover EVA 8 the
Voltammetric Amplifier for
micro-electrode technology

- Manual or Computer Controlled
- Capacitance Compensation
- Current sensitivity:
5 mV/nA to 1 V/pA
- +/- 2 Volt Command Ranges
- 17 Current Output Gain Ranges
- 7 Pole Bessel Filter adjustable from 0.1 - 30 kHz in 11 steps
- Two External Command Ranges for 1 Volt or 2 Volt at the Headstage.

HEKA

HEKA Elektronik provides the finest instruments today to achieve the needed progress of tomorrow...

Jaroslav Heyrovsky first developed the voltammetry technique from the discovery of polarography in 1922. With significant advances in theory, methodology, instrumentation and electronic, the technique is now well



established and a standard method in many electrochemical and electrophysiological labs.

The EVA 8 is a Voltammetric Amplifier, designed for voltage clamp/potentiostatic measurements of currents with carbon fiber or other microelectrodes. Voltammetry is an electrochemical method, where a current-voltage relationship is used for qualitative and quantitative analysis of solvents in a sample.

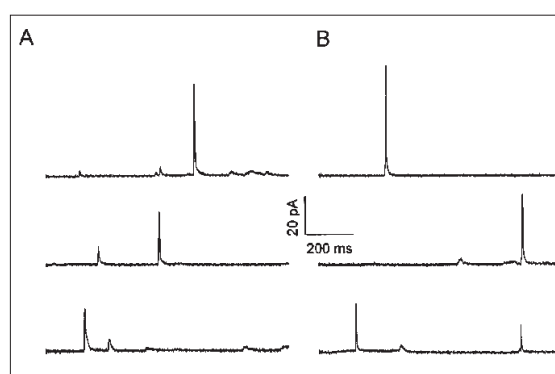
A typical application is the investigation of exocytosis processes, e.g. secretion of transmitters or hormones, and the measurement of extracellular concentrations of neurotransmitters (e.g. dopamine, noradrenaline, serotonin).

A positive electrode potential guarantees oxidation of the transmitter by the electrode. While the potential is kept constant, an increase of the local transmitter concentration induces a small increase of the measured outward current. This outward current is caused by the release of electrodes from the transmitter to the carbon fiber electrode. The time resolution of this method is usually below 1 ms. It can be used to detect the release of single vesicles from secreting cells.

The internal design of the EVA 8 is based on the well proven EPC 8 Patch Clamp Amplifier and provides the same high hardware quality and similar features.

Technically, the EVA 8 is noteworthy for three special features: the range-changing capability of the head stage, the extremely wide bandwidth available from the current monitor circuitry, and the computer control possibility. Together these features allow that a single head stage suffices for use with the different size of electrodes to allow a wide range of current measurement.

The versatility of the EVA 8 can best be appreciated by the variety of experiments that can be carried out with them. Besides high-resolution recordings of ion concentration this unit can be used in studies of quantitative determination of organic and inorganic compounds, determination of electron transfer and reaction mechanism, studies of oxidation and reduction process.



Amperometric spikes in two populations (A, B) of chromaffin cells. MPI for Biophysical Chemistry, Göttingen, Germany.

Technical specifications

Head Stage

Current Measuring Resistors:

50 G Ω (High range)
500 M Ω (Medium range)
5 M Ω (Low range)

Largest measurable currents:

200 pA (50 G Ω , range)
20 nA (500 M Ω , range)
2 μ A (5 M Ω , range)

Connectors:

Standard BNC
Ground Sense Input
Pipette command output

Filters

The current monitor signal of the EVA 8 is filtered by a 7-pole Bessel filter adjustable from 0.1 to 30 kHz in 11 steps. In the Filter setting "FULL" a 3 pole Bessel filter is used to provide full bandwidth of the output signal.

Capacitance Compensation

Fast capacitance cancellation:
0 to 10p F calibrated.

Electrode offset

Adjustment of the electrode offset using a 10 turn dial with a range of +/- 500 mV.

Command Potential

10 Turn dial:

Adjustment of positive or negative potential,
200 mV per turn for a maximum range of +/- 2 V

External:

100 mV/V or 200 mV/V selectable;
front panel BNC;
Maximum input of +/-10 V provides a maximum of +/- 1 V or +/- 2 V command potential

Display

3- Ω digit LCD panel meter.
Current monitor range:
200 pA (50 G Ω range)
200 nA (500 M Ω , 5 M Ω ranges)
Voltage monitor range of +/- 100 mV.

Current Monitor Signal

Gain:

0.005 mV/pA to 1000 mV/pA

Bandwidth:

100 kHz (500 M Ω , 5 M Ω ranges)
60 kHz (50 G Ω range)

Computer Interface

Computer controlled operation via 2 x 16 bit parallel I/O board or an ITC-16

Related Products

PULSE+PULSEFIT

Data acquisition and analysis software

X-CHART

Software implemented chart-recorder

EPC 9

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

EPC 8

The successor of the EPC 7 manual or digital control selectable.

EPC 7

The classic patch-clamp amplifier for single channel and whole-cell recording

PIP 5

Temperature controlled micro pipette puller

POTPULSE

Electrochemistry data acquisition and analysis software for IBM-PC or Macintosh computer.

PG 310/390

A completely computer controlled potentiostat/galvanostat with a compliance voltage of ± 20 V (± 90 V) and a current of 2 A (1 A). An optional external Pre-Amplifier for the Working Electrode expands the current range down to 100 pA.

PG 340

A Bi-potentiostat for Ring/Disk measurements and SECM applications. An optional external Pre-Amplifier for the Working Electrode expands the current range down to 100 pA.

PG 410/490

A potentiostat/galvanostat with a maximal compliance voltage of ± 20 V (± 90 V) and a current of 2 A (1 A). Current or voltage value will be displayed on an built-in digital voltmeter. The potentiostat can be computer or manually controlled.

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. You can get everything from signal conditioning and acquisition to analyzing and data backup systems from one supplier, to avoid compatibility headaches.



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