

## Price List



## Electrophysiology and Electrochemistry

effective January 1<sup>st</sup>, 2010

A complete list of technical specifications for all HEKA products can be viewed and downloaded at [www.heka.com](http://www.heka.com).

## Computer Controlled Patch Clamp Amplifiers

## EPC 10 USB

The fully computer controlled Patch Clamp Amplifiers of the EPC 10 USB family are fully integrated with the **LIH 8+8** A/D D/A data acquisition interface and are ready to be connected to either a Macintosh or PC via a **USB 2.0** host interface and include:

- InstruTECH LIH 8+8
- One model circuit
- One pipette holder per headstage\*)

For stimulation and data acquisition, PATCHMASTER or TIDA software is required separately. If the Patch Clamp Amplifier is being used in conjunction with a custom data acquisition system, HEKA will provide the control software EPCMASTER free of charge.

All EPC 10 USB Patch Clamp Amplifiers (positions 1. to 4.) are available in the standard configuration or with the options **Patch Amperometry Headstage** (position 12.) or **3-Electrode Headstage** (position 13.).

#### 1. EPC 10 USB Patch Clamp Amplifier\*\*)

One Patch Clamp Amplifier and Data Acquisition, USB version with LIH 8+8 interface in one housing.  
Price € 13.400,--

#### 2. EPC 10 USB Double Patch Clamp Amplifier\*\*)

Two Patch Clamp Amplifiers and Data Acquisition, USB version with LIH 8+8 interface in one housing.  
Price € 16.300,--

#### 3. EPC 10 USB Triple Patch Clamp Amplifier\*\*)

Three Patch Clamp Amplifiers and Data Acquisition, USB version with LIH 8+8 interface in one housing.  
Price € 19.550,--

#### 4. EPC 10 USB Quadro Patch Clamp Amplifier\*\*)

Four Patch Clamp Amplifiers and Data Acquisition, USB version with LIH 8+8 interface in one housing.  
Price € 23.100,--

\*\*) In addition there is required:  
Data acquisition software PATCHMASTER or TIDA. For compatibility please contact HEKA

## Extended Patch Clamp Amplifier Systems

#### 5. Clusters of EPC 10 USB Patch Clamp Amplifiers **NEW**

Two EPC 10 USB or one EPC 10 USB Patch Clamp Amplifier and one data acquisition interface (e.g. LIH 8+8) can be connected to extend the number of recording channels. The PATCHMASTER software can control the cluster. Please contact HEKA for available configurations.

Price on request

#### 6. Serial Patch Clamp Amplifier Extension **NEW**

Any of our EPC 10 Patch Clamp Amplifiers can be extended by one or several EPS 16 Probe Selector devices to allow serial switching between several headstages.

Price on request

## EPC 10 PLUS

## USB or PCI version

The fully computer controlled Patch Clamp Amplifier of the EPC 10 PLUS family integrates the **ITC-18** A/D D/A data acquisition interface that can be connected with the computer either with a **PCI-18** host card or **USB-18** host interface. All EPC 10 PLUS patch clamp amplifiers are ready to be connected to a Macintosh computer or PC and include:

- InstruTECH ITC-18
- Either a PCI host card or USB-18 adapter
- One model circuit
- One pipette holder per headstage\*)

#### 7. EPC 10 PLUS Patch Clamp Amplifier\*\*)

One Patch Clamp Amplifier and Data Acquisition Interface in one housing.  
Price € 14.350,--

#### 8. EPC 10 PLUS DOUBLE Patch Clamp Amplifier\*\*)

Two Patch Clamp Amplifiers and Data Acquisition Interface in one housing.  
Price € 17.750,--

#### \*) Pipette Holders:

The standard HEKA pipette holder is suitable for glass capillaries with an outer diameter of 1.5 mm. For your special requirements, modified holders for outer diameters of 1.0, 1.3, 1.7 and 2.0 mm are available on request without extra charge.

**Manually controlled Patch Clamp Amplifiers**

Stand-alone Patch Clamp Amplifiers for manual operation.

All stand-alone patch clamp amplifiers include:

- One model circuit
- One pipette holder per headstage\*)

For convenient stimulation and data acquisition these Patch Clamp Amplifiers can be combined with any A/D D/A data acquisition interface and suitable software.

**9. EPC 800 USB Patch Clamp Amplifier** **NEW**

Patch Clamp Amplifier with manual control and computer control via USB 2.0.

Price € 8.200,--

**10. EPC 8 Patch Clamp Amplifier**

Patch Clamp Amplifier with selectable Remote or Local operation modes. Use with PATCHMASTER software is required for Remote capabilities.

Price € 6.130,--

**11. EPC 7 PLUS Patch Clamp Amplifier - The classic instrument**

Manually operated patch clamp amplifier.

Price € 4.855,--

**Oocyte Clamp Amplifiers**

HEKA introduces its first fully computer controlled Oocyte Clamp Amplifier system iTEV 90. This new amplifier is fully digitally controlled and provides automated test and calibration routines. The iTEV 90 has the LIH 8 + 8 interface built-in and is fully controlled by the PATCHMASTER software.

**12. iTEV 90 Multi-Electrode Clamp Amplifier\*\*)** **NEW**

Amplifier system including three electrodes (Current, Voltage, Field-Compensation) with LIH 8 + 8 interface in one housing.

Price € 10.800,--

**\*) Pipette Holders:**

The standard HEKA pipette holder is suitable for glass capillaries with an outer diameter of 1.5 mm. For your special requirements, modified holders for outer diameters of 1.0, 1.3, 1.7 and 2.0 mm are available on request without extra charge.

**\*\*) In addition there is required:**

Data acquisition software PATCHMASTER.

**EPC Options and Accessories****13. Patch Amperometry Headstage** **NEW**

Headstage for EPC 10 patch clamp amplifiers with ground routing switchable between GND plug and BNC shield. Compatible with typical patch-amperometry electrode holders.

Available with a new EPC 10 USB. Please specify when ordering the EPC 10 USB.

Price € 200,--

Alternatively, as an additional headstage to upgrade your EPC 10 patch clamp amplifier.

Price € 1.555,--

**14. 3-Electrode Mode Headstage** **NEW**

Supports a third potential measuring electrode. The potential between reference and ground electrode is measured and automatically added to the potential between working and ground electrode. Typical applications:

- account for changing liquid junction potentials,
- use for precise electrochemical measurements,
- use for multi-electrode pair configurations.

Available with a new EPC 10 USB. Please specify when ordering the EPC 10 USB.

Price € 200,--

Alternatively, as an additional headstage to upgrade your EPC 10 USB patch clamp amplifier (revision "N" and later).

Price € 1.555,--

**15. Headstage for EPC Patch Clamp Amplifier**

• For EPC 7, EPC 7 Plus or EPC 8: Please note that the main amplifier has to be sent to HEKA for recalibration.

• For EPC 9: The system of amplifier with headstage can be recalibrated by the user.

• For EPC 10: The system of amplifier with headstage can be recalibrated by the user.

Price € 1.355,--

**16. TIB 14 S**

Digital output trigger Interface to be used with an EPC 10, EPC 10 DOUBLE, EPC 10 TRIPLE, EPC 10 QUADRO, EPC 9, EPC 9 DOUBLE, EPC 9 TRIPLE, and ITC-16, LIH-1600, LIH 8 + 8 or a CIO/DIO-Interface card. 14 TTL outputs and 14 open collector power outputs for switching the valves directly. 14 switches allow manual control of the outputs.

Price € 1.640,--

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**17. EPS 16 Probe Selector****NEW**

A headstage multiplexing device for connecting a patch clamp amplifier of the EPC 10 family. The Probe Selector is available with up to 16 headstages and is supported by PATCHMASTER software.

**Price on request (dependent on number of headstages)**

**18. PSA-12 USB Tone Generator**

Sound generator device for monitoring the seal resistance with EPC 9, EPC 10 patch clamp amplifiers or ITC-16, ITC-18, LIH 1600, ITC-1600 interfaces. Including USB cable and headphones. Supported by PATCHMASTER software under Win2000, WinXP, or Mac OS X (10.3.9 or newer).

**Price € 79,--**

**19. Model Cell MC-7/8**

Model circuit for EPC 7, EPC 7 Plus and EPC 8 patch clamp amplifiers. Ready to connect to BNC input of the headstage.

**Price € 85,--**

**20. Model Cell MC-9/10**

Model circuit for EPC 9 and EPC 10 patch clamp amplifiers. Ready to connect to BNC input of the headstage.

**Price € 85,--**

**21. Model Cell TESC**

Model circuit simulating two electrodes measuring from the same cell. Including 2 BNC cables (30 cm).

**Price € 275,--**

**22. Computer**

- We supply PC or Macintosh computers on request. Installation of the interface board and all programs as well as check of the computer in connection with the Patch Clamp Amplifier are included.
- Installation of a customer's computer will be quoted on time consumption.

**Price on request**

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**Computer Controlled Potentiostats/Galvanostats**

The fully computer controlled potentiostats / galvanostats of the PG 300 USB family are fully integrated with the **LIH 8+8** A/D D/A data acquisition interface and are ready to be connected to either a Macintosh or PC via a **USB 2.0** host interface.

For stimulation and data acquisition, POTMASTER software is required separately. If the potentiostat / galvanostat is being used in conjunction with a custom data acquisition system, HEKA will provide the control software PGMMASTER free of charge.

These computer controlled potentiostats / galvanostats can be used in combination with the high current boosters HCB 20 or HCB 50.

**23. PG 310 USB Potentiostat / Galvanostat**

- Max. current  $\pm 2A$ , compliance voltage  $\pm 20 V$
- Optional: External Pre-amplifier EPA for low noise current measurements  $< 100 nA$

Price € 12.615,--

**24. PG 390 USB Potentiostat / Galvanostat**

Designed for low conductive electrolytes

- Max. current  $\pm 1A$ , compliance voltage  $\pm 90 V$

Price € 12.965,--

**25. PG 340 USB Bipotentiostat / Galvanostat**

- 2 independent working electrodes (RING, DISK)
- Max. current  $\pm 2A$  at RING and DISK, compliance voltage  $\pm 20 V$
- Optional: 2 External Pre-amplifiers EPA for low noise current measurements  $< 100 nA$

Price € 16.410,--

**Manually Controlled Potentiostats/Galvanostats**

These potentiostats / galvanostats do not have a built-in data acquisition interface. They can be equipped with a stand-alone data acquisition interface (e.g. **LIH 8+8**, ITC-1600) and POTMASTER software to form a complete system for stimulation and data acquisition. They can also be easily integrated into existing experimental setups that already have a digital data acquisition system.

All HEKA manually controlled potentiostats / galvanostats include a serial interface RS-232 which enables digital remote control. HEKA also provides the software PGMMASTER for control of the potentiostats / galvanostats free of charge.

These manually controlled Potentiostats/Galvanostats can be used in combination with the high current boosters HCB 20 or HCB 50.

**26. PG 410 Potentiostat / Galvanostat**

- Max. current  $\pm 2A$ , compliance voltage  $\pm 20 V$
- 1 Digital Display for current or voltage
- 2 Precision potentiometers for adjusting initial potential / current

Price € 5.765,--

**27. PG 490 Potentiostat / Galvanostat**

Designed for low conductive electrolytes

- Max. current  $\pm 1A$ , compliance voltage  $\pm 90 V$
- 1 Digital Display for current or voltage
- 2 Precision potentiometers for adjusting initial potential / current

Price € 6.475,--

**28. PG 510 Potentiostat / Galvanostat**

- Max. current  $\pm 2A$ , compliance voltage  $\pm 20 V$
- 2 separate Digital Displays for current and voltage
- Analog Scan Generator for potentiostatic and galvanostatic ramps

Price € 6.585,--

**29. PG 590 Potentiostat / Galvanostat**

Designed for low conductive electrolytes

- Max. current  $\pm 1A$ , compliance voltage  $\pm 90 V$
- 2 separate Digital Displays for current and voltage
- Analog Scan Generator for potentiostatic and galvanostatic ramps

Price € 7.335,--

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**PG Accessories****30. EPA External Preamplifier**

To be used with a PG 310 USB or PG 340 USB for low noise measurements in current ranges 100 pA, 1 nA, 10 nA and 100 nA. The EPA works in potentiostatic and galvanostatic modes and provides an additional input for a low current working electrode.

**Price € 1.355,--**

**31. HCB 20 High Current Booster**

Can be used with all HEKA Potentiostats / Galvanostats and other third-party potentiostats for currents up to **20 A at 10 V** permanently shortcut protected.

**Price € 3.065,--**

**32. HCB 50 High Current Booster****NEW**

Can be used with all HEKA Potentiostats/Galvanostats and other third-party potentiostats for currents up to **50 A at 10 V** permanently shortcut protected.

**Price € 4.590,--**

**33. ESG 10 Analog Scan Generator****NEW**

Scan Generator for smooth analog voltage ramps without digital steps. 20 scan speeds can be selected in the range of 1 mV/s to 1000 V/s. The ESG 10 is manually operated, can be triggered and provides a scanning potential range from -10 V to +10V. Initial potential, first and second reversal potential can be adjusted.

**Price € 2.640,--**

**34. TIB 14 S Trigger Interface**

A Digital output trigger interface to be used with a PG 310/390, PG 340 or an interface LIH 8 + 8, ITC-1600. 14 TTL outputs and 14 open collector power outputs for switching e.g. valves directly. 14 switches allow manual control of the outputs.

**Price € 1.640,--**

**35. CIP 2 Conductance Interface****NEW**

Interface box for conductance measurements using two potentiostats. The conductance can be measured during electropolymerization but can also be used in order to characterize the conductance of deposited polymers in relation to the applied potential. The CIP 2 has connections for two potentiostats and is delivered with:

- 4 test-plugs for conductance from 50 mS to 50  $\mu$ S
- BNC cables to connect 2 potentiostats

**Price € 1.230,--**

**36. SFU 3 Stand-Alone Shear Force Unit****NEW**

Can be used with other commercially available SECM systems. Measures current less the height profile of structured samples. The SFU 3 includes:

- Controller SFU 3
- Shear Force electrode holder
- Shear Force electrode with 1  $\mu$ m electroactive diameter

The unit has analog inputs for setting the frequency, waveform and amplitude for the stimulation of the shear-force electrode. Phase shift and amplitude dampening of the shear force tip are available as analog voltages at BNC connectors.

**Price € 6.300,--**

**37. MC 300 Model Cell****NEW**

Model circuit for all HEKA Potentiostats/Galvanostats for current ranges from 1  $\mu$ A to 10 A. The circuit includes different capacitors forming various Randle circuits. The cell can be used for verifying the potentiostat and for calibrating the current ranges for impedance measurements. Includes 3 BNC cables for connecting the model circuit to the potentiostat.

**Price € 300,--**

**38. MC 300-LC Model Cell****NEW**

Model circuit for the current ranges 100 pA, 1 nA, 10 nA, and 100 nA for the external preamplifier EPA. Includes 3 BNC cables for connecting the model circuit to the potentiostat.

**Price € 250,--**

**39. 19" Bench Top Rack**

Aluminium. Colour: black.

Outer dimensions (W x H x D): (53 x 64 x 32) cm / (21.2 x 25.2 x 12.6) inches, 12 height units.

**Price € 120,--**

**40. Computer**

- We supply PC or Macintosh computers on request. Installation of the interface board and all programs as well as check of the computer in connection with the Patch Clamp Amplifier are included.
- Installation of a customer's computer will be quoted on time consumption.

**Price on request**

**Microelectrode Amplifiers****41. EVA 8**

Voltammetric Amplifier for microelectrode technology with Remote and Local Operation Mode selectable.

- Amplifier with headstage and model circuit
- Pipette holder with BNC connector to be used for microelectrodes

**Price € 4.050,--**

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**Acquisition Interfaces****42. InstruTECH LIH 8+8**

Expandable 16-bit multi-channel data acquisition interface for connection with a PC or Macintosh computer via a **USB 2.0** interface.

Single unit model (8 A/D and 4 D/A):

- **LIH 8+8**: Single LIH 8+8 unit with one USB 2.0 cable

**Price € 4.200,--**

Dual unit model (16 A/D and 8 D/A): Maximum sampling rate of 200 kHz for 4 channels (50 kHz for all 16 channels).

- **LIH 8+8/2**: Two LIH 8+8 units and two USB 2.0 cable

**Price € 7.560,--**

**43. InstruTECH ITC-18**

16-bit data acquisition interface with four D/A outputs, eight simultaneous sampling A/D inputs (each with a programmable gain amplifier), sixteen digital inputs and thirty-two digital outputs, all optically isolated.

Includes:

- ITC-18 data acquisition interface
- Interconnect cables

Available models:

- **ITC-18/PCI**: ITC-18 with 5 Volt PCI host interface
- **ITC-18/PCIV3**: ITC-18 with 3.3 Volt PCI host interface
- **ITC-18/USB**: ITC-18 with USB 2.0 host interface

**Price € 4.200,--**

**44. InstruTECH ITC-1600**

Expandable 16-bit multi-channel data acquisition interface for connection with a PC or Macintosh computer via a PCI host card interface.

Includes:

- I-1600 data acquisition interface
- Choice of PCI-1600 or PCI-1600e host interface
- One pair FO-1600 fiber-optic cables

Single unit models (8 A/D and 4 D/A):

- **ITC-1600**: Single I-1600 unit with a PCI (3.3 or 5 Volt) host interface
- **ITC-1600e**: Single I-1600 unit with a PCI Express host interface

**Price € 4.200,--**

Dual unit models (16 A/D and 8 D/A):

- **ITC-1600/2**: Two I-1600 units with one PCI (3.3 or 5 Volt) host interface
- **ITC-1600/2e**: Two I-1600 units with one PCI Express host interface

**Price € 7.560,--**

Expansion unit:

- **I-1600**: Analog / Digital unit for expanding ITC-1600, includes 1 pair InstruLINK cables

**Price € 3.400,--**

For all of the Data Acquisition Hardware there is, in addition, required Data Acquisition software **PATCHMASTER, POTMASTER, CHARTMASTER, TIDA or LIH IGOR XOP's** .

**Host Interface Boards****45. Host Interfaces available for the ITC-16 or EPC 9**

- **PCI-16**: 5 Volt PCI host interface card including RC-16 cable
- **PCI-16V3**: 3.3 Volt PCI / PCI-X host interface card including RC-16 cable
- **USB-16**: USB 2.0 host interface including RC-16/12 and USB cable

**Price € 730,--**

**46. Host Interfaces available for the ITC-18 or EPC 10 Plus**

- **PCI-18**: 5 Volt PCI host interface card including SC-18 cable
- **PCI-18V3**: 3.3 Volt PCI / PCI-X host interface card including SC-18 cable
- **USB-18**: USB 2.0 host interface including SC-18/12 and USB cable

**Price € 730,--**

**47. Host Interfaces available for the ITC-1600, LIH 1600 or EPC 10**

- **PCI-1600**: PCI (3.3 or 5 Volt) host interface card
- **PCI-1600e**: PCI Express host interface card

**Price € 845,--**

**Acquisition Accessories - Cables****48. Cables**

Any accessory cables required for acquisition interfaces and hardware connections can be provided by HEKA. Please contact us to discuss requirements and ask for pricing.

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**Software**

*All software is available for Mac OS X and Windows 2000/XP, VISTA, and Windows 7 unless otherwise specified.*

*The HEKA software packages are copy protected by a dongle (hardware key). At any time, the purchase of a software package entitles the user to download the newest available software release from the HEKA web site or request a CD-ROM free of charge.*

*Discounts are provided for multiple software licences. (2nd and 3rd license = 20%, 4th and more = 25%)*

**Acquisition and Analysis****49. PATCHMASTER with Software Lock-In Amplifier, Photometry support and extended Online Analysis**

Multi-channel stimulation/acquisition software supporting up to 32 input and 32 output channels. Driver software for amplifiers of the iTEV, EPC 10 USB, EPC 10 Plus, EPC 10, EPC 9, EPC 8 and EPC 7 family as well as for ITC-16, ITC-18, LIH 1600, and LIH 8+8. PATCHMASTER includes a PULSE license in the same dongle.

**Price € 2.970,--**

**50. PATCHMASTER Upgrade**

Upgrade of an existing PULSE family dongle to include PATCHMASTER. HEKA requires the original dongle.

**Price € 1.060,--**

**51. FITMASTER**

Analysis and fitting routines for data acquired with PATCHMASTER or PULSE.

One license allows to run FITMASTER on two computers.

**Price € 1.200,--**

**52. CHARTMASTER**

Multi-purpose stimulation/acquisition software including software Lock-In and Photometry extension supporting up to 32 input and 32 output channels. Driver software for ITC-16, ITC-18, LIH 1600, and LIH 8+8.

**Introductory Price € 970,--**

**53. POTMASTER**

Stimulation/acquisition software with scan generator, data acquisition and online analysis. Supports

- Various electrochemical methods
- Full control of the PG 310/340/390 USB
- Remote control of the PG 410/490 and PG 510/590 via RS-232 interface
- Supporting High Current Booster HCB 20/HCB 50

**Price € 2.285,--**

**54. POTMASTER Upgrade**

Upgrade of an existing POTPULSE dongle to include POTMASTER. HEKA requires the original dongle.

**Price € 335,--**

**55. POTMASTER Analysis Dongle**

Enables POTMASTER to be run for review and analysis of data recorded by POTMASTER or POTPULSE.

**Price € 390,--**

**56. EC Tools**

User-friendly masks for quick start and easy use of certain electrochemical methods and applications

- Cyclic Voltammetry
  - Impedance Spectroscopy
  - Pitting Corrosion
  - Polarization Resistance
  - Differential Pulse Voltammetry
  - Normal Pulse Voltammetry
  - Fast Pulse Voltammetry
  - Potential Step Voltammetry
- POTMASTER and FITMASTER software is required.

**Free of Charge**

**57. TIDA**

8 channel data acquisition and analysis software for EPC 10 USB, EPC 10, EPC 9 as well as for LIH 8+8, LIH 1600, ITC-16 or ITC-18. Running under Windows 2000, XP.

**Price € 1.950,--**

**58. TIDA Analysis Dongle**

Current holders of a TIDA license are entitled to purchase one additional TIDA analysis dongle per license.

**Price € 160,--**

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**GLP Software****59. PATCHMASTER PRO**

PATCHMASTER PRO is designed to support a set of Good Lab Practice (GLP) standards for data acquisition and handling, as established by the Food and Drug Administration (FDA) (21 CFR Part 11).

Additional information can be provided on request.

Please contact HEKA directly.

**Price € 9.540,--**

**60. FITMASTER PRO**

FITMASTER PRO can be used in combination with PATCHMASTER PRO for analysis of data acquired in an GLP environment.

Additional information can be provided on request.

Please contact HEKA directly.

**Price € 1.270,--**

**Additional Software****61. EPCMASTER****NEW**

In case the Patch Clamp Amplifiers of the EPC 10 USB, EPC 10, EPC 10 Plus, or EPC 9 family should be used in conjunction with a custom data acquisition system, we provide the software EPCMASTER for control of the amplifier functions. The amplifiers EPC 8 and EVA 8 can be controlled via a data acquisition interface LIH 8 + 8, LIH 1600, ITC-18 or ITC-16.

**Free of Charge**

**62. PGMMASTER****NEW**

In case any of the PG 300 family of potentiostats / galvanostats should be used in conjunction with a custom data acquisition system, we provide PGMMASTER for control. The PG 410/490 and PG 510/590 can be controlled via a data acquisition interface LIH 8 + 8, ITC 1600, ITC-18 or ITC-16.

**Free of Charge**

**63. LIH XOPs**

IGOR XOP's for controlling the LIH 1600 and LIH 8 + 8 interface from within IGOR.

**Free of Charge**

**64. EPC DLL****NEW**

C-DLL to integrate HEKA amplifiers and data acquisition systems in your own software. Includes documentation and use of the support hotline.

**Price € 425,--**

**65. Data Access**

Import of PATCHMASTER and PULSE data to Sigma Plot, Microsoft Excel, Visual Basic, Origin and IGOR Pro.

**Price € 250,--**

**66. TAC**

Single channel analysis. Technical specifications see "www.bruyton.com"

**Price € 675,--**

**67. IGOR Pro 6.0**

Graphing and data analysis. Works and plots PULSE and PATCHMASTER data. For Windows and Mac OS.

Technical specifications see "www.wavemetrics.com"

**Price € 470,--**

**68. IGOR Pro 5.0 Manuals**

Printed Manuals: Volume II (User's Guide) and Volume III (Programming and Reference Manual) Available as long as supply lasts.

**Price € 90,--**

**69. IGOR Pro Update**

Update your IGOR to IGOR Pro 6.0

**Price € 150,--**

**70. IGOR XOP Toolkit 5**

For creating Igor XOPs

**Price € 80,--**

**71. Dongle Exchange**

- Switch from Mac OS to Windows or vice versa.
- Changing from Macintosh ADB bus to Macintosh USB or Windows USB bus.

Dongle exchanges are available for PATCHMASTER, POTMASTER, FITMASTER, CHARTMASTER, PULSE, POTPULSE, PULSEFIT, PULSETOOLS, X-CHART, FURA. HEKA requires the original dongle.

**Price € 160,--**

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**Pipette and Electrode Manufacturing****72. PIP 6 Pipette Puller****NEW**

Temperature controlled pipette puller with alignment tool for manufacturing of pipettes with identical length.

**Price € 2.800,--**

**73. Heating filaments for PIP 5 or PIP 6 Pipette Puller**

Pack of 10

**Price € 29,--**

**74. Additional Spacer Disks**

A Set of 2 additional spacer disks (No. 8 and 10) for the PIP 5 or PIP 6 pipette pullers. No's. 7, 9, and 11 are included and delivered with original purchase of the pipette puller.

**Price € 120,--**

**75. Glass Capillaries**

We offer Borosilicate, Aluminosilicate, and quartz glass with several lengths and diameters from SUTTER Instrument. For technical details please refer to the SUTTER catalog or web site ([www.sutter.com](http://www.sutter.com)).

**Price on request**

**Holders and Accessories****76. Pipette Holder**

The HEKA pipette holders are available for glass capillaries with an outer diameter of 1.0, 1.3, 1.5, 1.7 and 2.0 mm. Please specify when ordering.

**Price € 140,--**

**77. Microelectrode Holder**

Connects microelectrodes or carbon fiber electrodes with a gold-plated connector pin to the headstage of a HEKA amplifier. Holders for electrodes with outer diameters of 2.0 or 2.7 mm are available. Please specify when ordering.

**Price € 140,--**

**78. Replacement Cap Set**

Includes screw cap, O-rings, and spacer cylinder. Available for pipette holders for capillaries with outer diameters of 1.0, 1.3, 1.5, 1.7 and 2.0 mm.

**Price € 49,--**

**79. O-rings**

Replacement O-rings for pipette holder. Please specify the outer diameter of the glass capillaries used. Pack of 10 O-rings.

**Price € 30,--**

**80. Electrode Connector Pin**

Gold pin to connect Ag/AgCl electrode to headstage.

**Price € 20,--**

**81. Ground Connector Pin**

Pin to connect the bath electrode to the GND connector of the headstage. Pack of 10 pins.

**Price € 30,--**

**Electrodes****82. Pt microdisk electrode**

Electro-active diameter 1  $\mu\text{m}$

**Price € 750,--**

**83. Pt microdisk electrode**

Electro-active diameter 5  $\mu\text{m}$

**Price € 450,--**

**84. Pt microdisk electrode**

Electro-active diameter 10  $\mu\text{m}$

**Price € 450,--**

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**85. Microelectrodes**

The sharp microelectrode with a standard length of 8 cm is based on a fiber with 80  $\mu\text{m}$  outer diameter and 25  $\mu\text{m}$  diameter metal core, alloy of platinum/tungsten (Pt 90%/W 10%). The metal core is surrounded and isolated by quartz glass. The electrode fiber is contacted with a gold-pin and mounted in a glass capillary. The microelectrode can be directly connected to any preamplifier from HEKA using the HEKA microelectrode holder for electrodes with outer diameter of 2 mm. Available in two versions:

- **ground only:** The tip is ground sharply with an impedance < 1 MOhm at 1 kHz.
- **pulled and ground:** The small tip is pulled and ground sharply with an impedance > 1 MOhm at 1 kHz.

Other materials of the electroactive core are available on request.

**Price € 140,--**

**86. Carbon Fiber Microelectrodes**

- Manufactured with Anodic Electrophoretic Deposition of Paint (EDP) method.
- 5  $\mu\text{m}$  diameter
- Gold-plated pin connected, ready to use with HEKA Microelectrode Holder for electrode with outer diameter of 2.7 mm.
- Pack of 10 pcs.

**Price € 340,--**

**87. Rotating Ring-Disk Electrode**

Rotator for disk or ring-disk configurations and speed control unit to be used with the PG 340, electrodes with fixed Pt-ring and disk.

**Price on request**

**Electrochemical Cells****88. ECC 7 Electrochemical Cell**

Complete electrochemical cell including connections for a thermostat and for working under inert gas. The cell can be connected to any potentiostat / galvanostat and includes:

- Cell body of double wall glass
- Cell cover of Teflon with connections of working electrode, counter electrode, reference electrode, inert gas and solutions.
- Cell holder of stainless steel
- Adjustable sample holder made of Teflon
- Counter electrode of Platinum with Teflon body
- Ag/AgCl pseudo reference electrode with Teflon body for organic solvents
- Calomel or Ag/AgCl reference electrode with Hager-Luggin capillary

**Price € 1.950,--**

**89. OSC 5 Open Sandwich Cell****NEW**

Complete open electrochemical cell for electrochemical applications in aqueous or organic electrolytes. The cell is especially designed for HEKA EIProScan systems. The cell includes:

- One pseudo reference electrode for aqueous or organic electrolytes
- One Pt counter electrode
- One sample contact
- Cell bottom with flat Pt disc electrode (d=0.5 mm) and gold contact to a second working electrode
- Ring holder of stainless steel for fitting on the translation stages of an inverted microscope.
- Ring holder for mounting on a cell holder
- Stand alone cell holder of massive stainless steel
- Cell holder for mounting on other positioning systems are available on request

**Price € 2.675,--**

**Electrodes for Electrochemical Cell****90. Counter Electrode**

Counter Electrode of Platinum with Teflon body including one shielded electrode cable.

**Price € 180,--**

**91. Pseudo Reference Electrode**

Ag/AgCl pseudo reference electrode with Teflon body for organic solvents including one shielded electrode cable.

**Price € 160,--**

**92. Reference Electrode**

Calomel or Ag/AgCl reference electrode with Hager-Luggin capillary.

**Price € 310,--**

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**Faraday Cage****93. Faraday Cage**

Stand-alone Faraday Cage, outer dimensions (H x W x D): (190 x 110 x 83) cm / (74.8 x 43.3 x 32.7) inches. Other dimensions upon request.

**Price € 2.280,--**

**94. Front Door Option****NEW**

Upgrade of the Faraday Cage with standard dimensions with two front doors.

**Price € 520,--**

**95. Demountable Faraday Cage****NEW**

Stand-alone Faraday Cage, colour: HEKA blue, outer dimensions (H x W x D): (190 x 100 x 100) cm / (74.8 x 39.4 x 39.4) inches. Parts are demountable to simplify transportation.

**Price € 3.250,--**

**96. Demountable Large Faraday Cage****NEW**

Stand-alone Faraday Cage, colour: HEKA blue, outer dimensions (H x W x D): (192,5 x 130 x 100) cm / (75.8 x 51.2 x 39.4) inches. Parts are demountable to simplify transportation.

**Price € 3.650,--**

**97. Table Top Faraday Cage****NEW**

The faraday cage has one front door which can be placed to the left or right side optionally. Cable ducts are provided from all sides. A contact strip for ground connectors is built-in. The cage has a massive base plate made of steel. Colour: HEKA blue. Outer dimensions (H x W x D): (86 x 56 x 59) cm / (33.9 x 22.0 x 23.2) inches.

**Price € 2.780,--**

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## Complete Systems

## EIProScan Systems – much more than SECM

The **HEKA EIProScan** is a high-resolution Electrochemical Probe Scanner which can be used as a SECM.

The two examples of different high-resolution EIProScan systems below differ with respect to the positioning system and required usage by the customer. Due to the fact that these systems can be purchased individually, there is room for customization of systems to suit your individual requirements. Please contact HEKA directly.

All EIProScan Systems consist of the following:

- Bipotentiostat/Galvanostat PG 340 USB with one or two External Preamplifiers EPA. This fully computer controlled Bipotentiostat is ready to be connected via USB 2.0 to a computer. The minimum current resolution for the preamplifier: 3fA in  $\pm 100$ pA range.
- Real Time Computer System with Software POTMASTER and POTMASTER SCAN Extension for controlling motor movements and scan modes. This ready configured computer system is delivered with a 20 inch flat screen monitor, keyboard, mouse, software, cables and adapters
- Positioning System consisting of 3 stepper motors or DC servo motors (X,Y,Z) and a fast Piezo (Z) with a scan range of 100  $\mu$ m and a resolution of 1.5 nm.
- The high precision motors in XYZ-direction are connected with a real-time controller that manages real-time speed control and encoder-based position control by a closed-loop regulation.
- The EIProScan systems have large scanning areas in all directions and feature high precision mechanics. The large scan tables(X Y) provides sufficiently space for mounting different types of electrochemical cells, temperature control or additional light sources
- Different types of positioning systems are available. They can be mounted on a granite plate with granite portal, on breadboard or adapted to fit on an inverted microscope. HEKA provides individually customized configurations of positioning systems.
- The price of the EIProScan systems includes cables, adapters, manuals, set-up of all instruments, installation of the software, grounding of the set-up and check of the basic functions of the instruments and software by HEKA personnel.

### 98. ELP 10 – EIProScan HR, XY: 10 nm resolution mounted on breadboard NEW

The system contains all of the individual components previously listed with the following positioning system:

#### Positioning System with Piezo

- High resolution scan table for XY-axis.
- Resolution in XY: 10 nm DC servo motors
- Resolution in Z: 10 nm DC servo motor / 1.5 nm Piezo
- Scanning area (X, Y, Z): (100 x 100 x 50) mm
- Encoder based closed loop position control for all three axis
- XY scanning stage mounted on a breadboard (45 x 60 x 5 cm).
- A rail system with adjustable height is mounted on two steel columns and carries the Z axis
- External 16-bit controller for the Piezo

#### Price on request

Various accessories are available for the EIProScan systems such as different types of electrochemical cells, microelectrodes, shear force unit, Faraday cages, vibration isolating systems and a microscope system for optical control when the tip approaches the sample surface.

#### Optional accessories for ELP 10:

<b>Electrochemical Cell</b>	Electrochemical Cell Open Sandwich Cell
<b>Microelectrodes</b>	Pt microdisk electrodes with 1 $\mu$ m, 5 $\mu$ m, 10 $\mu$ m
<b>Maintenance of Microelectrodes</b>	Microelectrode polishing machine
<b>Vibration isolation</b>	Anti vibration isolating lab table and / or Active vibration isolating system
<b>Scanning with constant distance between tip and sample</b>	SFU 3 Shear Force Unit for EIProScan
<b>Electrical shielding</b>	Stand alone Faraday Cage or Table Top Faraday Cage

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**99. ELP 11 – EIProScan HR, XY: 10 nm resolution  
adapted to fit on inverted microscope **NEW****

*All the same components as ELP 10 above except:*

**Positioning System with Piezo**

- High resolution scan table for XY-axis
- Resolution in XY: 10 nm DC servo motors
- Resolution in Z: 10 nm DC servo motor / 1.5 nm Piezo
- Scanning area 100 x 100 x 50 mm, limits depending on microscope type can be configured
- Encoder based closed loop position control for all three axis
- External 16-bit controller for the Piezo
- Mechanical adaptation for use on an inverted microscope including microscope translation stage for aligning of optical and scan axis

**Price on request**

**Optional accessories for ELP 11:**

<b>Electrochemical Cell</b>	Open Sandwich Cell Recording Chamber Recording Chamber with temperature control
<b>Microelectrodes</b>	Pt microdisk electrodes with 1 $\mu\text{m}$ , 5 $\mu\text{m}$ , 10 $\mu\text{m}$
<b>Maintenance of Microelectrodes</b>	Microelectrode polishing machine
<b>Vibration isolation</b>	Anti vibration isolating lab table
<b>Scanning with constant distance between tip and sample</b>	SFU 3 Shear Force Unit for EIProScan
<b>Electrical shielding</b>	Stand alone Faraday Cage

**EIProScan Options**

**100. SFU 3 Shear Force Unit for EIProScan **NEW****

Measures current less the height profile of structured samples. The SFU 3 upgrades the EIProScan systems to add the "constant distance" scan mode ". The SFU 3 includes:

- Controller SFU 3
- Shear Force electrode holder
- Shear Force electrode with 1  $\mu\text{m}$  electroactive diameter
- 4 additional 16-bit AD converters for the Real Time Computer system
- Required cables

**Price € 7.300,--**

The SFU 3 is also available as stand-alone system to be used with other SECM systems (see position 36.).

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**Bilayer Systems**

HEKA is the exclusive sales partner for the Ionovation product range ([www.ionovation.com](http://www.ionovation.com)) covering bilayer applications. The product range covers Ionovation Compact (complete automated bilayer setup), Ionovation Bilayer Explorer (electro-optical setup with inverted microscopes). Please contact HEKA directly for quotations.

Lipid bilayers are a widely used tool to investigate membrane proteins in a tailorable lipid environment. Compared to traditional methods the bilayer technique is not limited to certain cell lines and extends the scope to subcellular vesicles and pore forming proteins like synucleins or toxins.

We are offering a bench-top-format system and a new add-on approach to standard inverted microscopes. The systems provide a versatile solution that suits the needs in pharmacological research, drug discovery, and in academia.

**101. Ionovation Compact NEW**

The complete bilayer setup in a bench-top-format, highly automated and equipped with camera for optical inspection of the bilayer, auto-perfusion, and all electrical components for membrane electrophysiology research.

**Price on request**

**102. Ionovation Bilayer Explorer NEW**

The innovative electro-optical setup with all electrical and mechanical components for high-content membrane electrophysiology research. The setup offers the combined observation of electrical and optical events on the membrane (spectroscopical components are available as an option).

**Price on request**

**103. Bilayer Detection Kit Classic**

for 20 experiments. Consisting of 20 bilayer chambers and IonoChem Lipid stock solutions.

**Price € 299,-**

**104. Bilayer Detection Kit Explorer**

for 20 experiments. Consisting of 20 bilayer slides and IonoChem Lipid stock solutions.

**Price € 299,-**

**105. Bilayer Validation Sample**

100µl solution containing alpha-Hemolysin from Staphylococcus aureus. For at least 25 tests.

**Price € 99,-**

**Optical Systems**

Photo-activation of excitable cells has proved to be a powerful tool to study connectivity patterns in neuronal slice tissue. In a conventional mapping experiment an intracellular recording from a single cell in the slice is established. The light beam is consecutively focused onto different locations within the surrounding tissue, eliciting spikes in the local cells. These spikes can be detected as postsynaptic events in the intracellular recording if a functional connection is present within the tissue. A connectivity map can be generated from the location of light irradiation and the postsynaptic response measurement. The SLP 40 has an extraordinarily wide projection range of 3.6 by 5.2 mm and allows for an extremely flexible choice of stimulation parameters for each presynaptic location. In addition, the SLP 40 can be used in dynamic stimulation paradigms and, optionally, upgraded for parallel stimulation of multiple sites.

**106. SLP 40 Spatial Light Pattern Generator NEW**

Flexible illumination system based on DMD (deflectable mirror device) techniques for uncaging experiments in brain slices.

Typical applications:

- connectivity studies in acute slices of neuronal tissue
- studies of dynamic signal integration in single cells
- targeted release of caged compounds
- photo-bleaching

**Price on request**

**Patch Clamp Systems****107. Complete Patch Clamp Setup**

HEKA offers customer specific complete set-up's including system integration and installation.

**Price on request**

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## Further Products

**SUTTER INSTRUMENT COMPANY -  
www.sutter.com**

HEKA is sales partner of Sutter in Germany, Austria, USA, Canada and Latin America. The product range covers:

**108. Micromanipulators**

Motorized 3-Axis Micromanipulator Systems (MPC-325, MPC-365, MPC-385, MP-225, MP-285), Huxley-Wall Style Manipulator System (MP-85), 3-Axis Manual Micromanipulator System (MM-33 / MM-33A), Miniaturized Micropositioners (MM-1 / MM-3)

**109. Translators & Stages**

Motorized and Manual XY Translation System For Fixed-Stage Microscopes (MT-2000, MT-1000), Large Moving Stage And Fixed-Stage Platform (MT-78 / MT-78-FS)

**110. Manipulator Stands**

Manipulator Stands (MT-75 / MT-70 series), Micromanipulator Platforms (MD series)

**111. Pipette Pullers and Bevelers**

Laser Based Micropipette Puller - for quartz glass (P-2000), Next Generation Flaming/Brown Micropipette Puller (P-1000), Flaming/Brown Micropipette Puller (P-97), Vertical Micropipette Puller (P-30), Microelectrode Beveler (BV-10)

**112. Microinjection**

Micromanipulators, Digital Microinjector and Analog Microinjector (XenoWorks), Piezo Impact Drive (PrimeTech PMM-150FU)

**113. Imaging Products**

Wavelength Switcher (DG-5, DG-4), Light Sources (Lambda XL, Lambda LS), Filter Wheels (Lambda 10-3, Lambda 10-2), Shutters (Smart Shutter)

**ALA SCIENTIFIC INSTRUMENTS INC. -  
www.alascience.com**

HEKA is an official reseller for products manufactured by ALA Scientific. The product range covers:

**114. Patch Pipette Manufacturing**

Microforge Coater/Polisher Systems (ALA-CPM-2)

**115. Perfusion Systems**

Gravity Driven Bath Perfusion Systems (VC3-PG4, VC3-PG8, VM-4PGTIB, VM-8PGTIB etc.), Pressure Driven Perfusion Systems (VC3-SP4, VC3-SP8 etc.), High Speed Solution Switcher (HSSE), Internal Pipette Perfusion System (2PK+), Various Perfusion Manifolds

**116. Recording Chambers and Microincubators**

various MS-type chambers, Temperature Controlled Chambers (HCMIS)

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**Terms and Conditions**

**Ordering information:** We accept orders by fax, mail and e-mail. See our addresses or those of our resellers and distributors, in HEKA "Contact" section at [www.heka.com](http://www.heka.com).

**Prices:** For countries without a regional exclusive distributor of HEKA products, prices are provided in both EURO and USD price lists. Customers ordering from the United States and South American countries, please refer to the USD Price List. Canadian customers please contact HEKA Electronics Inc. for quotations. All other customers please refer to our EURO Price List. Prices given in official quotations are valid for 3 months. All prices are subject to change without prior notice. All prices ex works are unit prices, carriage forward, not including value-added tax and applicable duties.

**Payment:** Payment terms are net 30 days. HEKA Electronics Inc. and HEKA Instruments also accept major credit cards, bank wire transfers and bank drafts drawn on U.S. or Canadian banks. For certain international sales, we will require documents against payment (D/P), i. e. a letter of credit (processing fee will apply), or payment in advance. In countries where we have local distributors, please contact them for individual sales conditions.

**Shipping:** Shipping charges are prepaid and added to our invoice. All products are usually sent door-to-door by air freight and courier. The carrier is selected by HEKA but can also be specified by the customer when placing an order.

**Returns:** HEKA items ordered in error may be returned within 30 days of receipt. A 15% restocking fee will be applied as well as any charges that may have been incurred to return the equipment to its original condition. The original packing material should be used. Please contact HEKA directly prior to any returns.

**Warranty:** HEKA provides a guarantee of one year from date of invoice to all instruments and labor. The warranty covers replacement of parts and labor to repair the product. The equipment must be returned to HEKA with pre-paid shipment. Return shipment is complementary. Technical service for and repairs of all instruments, if required, will be carried out directly by HEKA. The equipment must have been operated according to instructions provided in the user manual and any abuse, misuse or unauthorized repairs will void warranty conditions.

**Software Support:** Support is free of charge for owners of HEKA products.

**Software Upgrade:** HEKA has an unsurpassed policy regarding upgrades of its software! Upgrades of HEKA software (for PATCHMASTER, FITMASTER, POTMASTER, TIDA) are available to licensed holders free of charge. The latest version can also be obtained from our download page, or you can contact HEKA to receive our latest CD. When you purchase a copy of a software program, you purchase one license that is protected by a hardware key ("dongle"). We provide a discount for multiple licenses of our software as follows: 2nd and 3rd licences = 20%; 4th or more = 25%. This discount applies to HEKA software only and not to products from third parties.

**Sales Support:** We provide exceptional pre and post sales customer support from our trained international sales representatives. Customer support is free of charge for registered users of HEKA products.

**Repair Policy:** HEKA prides itself on its superb, long-standing repair and maintenance service of its hardware products. In fact we still offer support for the HEKA produced EPC 7 - also known as List amplifier - that was introduced back in 1982! Users have to cover all shipping costs to have the equipment shipped for repair and returned. HEKA will cover return costs if the repair is under warranty.

**General notice:**

*Product names herein are for identification purposes only and may be trademarks of their respective owners. HEKA disclaims any and all rights in those marks.*

**Price list i50**

*All previous price lists are invalid. Warranty standard one year on parts and labour. All prices ex works are unit prices, carriage forward, not including value-added tax or any other applicable taxes. Prices are subject to change without notice. We reserve the right to effect technical changes as development progresses.*

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