



The EPC 10 USB is fully integrated with HEKA's LIH 8+8 AD/DA interface. The advanced integration of the EPC 10 USB with the A/D D/A interface and software minimizes total recording noise, eliminates compatibility problems, saves on additional equipment expenses and set-up and training times. The built-in interface utilizes the latest USB 2.0 and high speed processing technologies without the need for a peripheral PCI card.

The analog input and output channels are isolated from the digital lines that communicate with the computer. Each analog channel has its own separate ground patch and the digital section has a completely different ground. The result is complete isolation of the acquisition side from the computer side eliminating ground loops and achieving low noise. The LIH 8+8 has eight analog inputs, four analog outputs, sixteen digital inputs and sixteen digital output channels all sampling synchronously.

In current clamp (C Clamp) mode, the membrane potential (V_m) is measured and used to compute a current waveform which is fed back into the cell. As a result, slow voltage drift and other artificial voltage-dependent conductances are controlled and adjusted to a fixed value. This **Low Frequency Voltage Clamp** (LFVC) negates any readjustment of this holding current while conducting C Clamp experiments.

The design of the pre-amplifier allows "True C Clamp" experiments to be performed. In C Clamp mode, the headstage acts as a voltage follower circuit, which guarantees very fast and accurate membrane potential recordings. Similar to a classical microelectrode amplifier, the cell voltage is measured on a very high input resistance and C-fast compensation is no longer necessary.

The EPC 10 USB is equipped with 3 TTL trigger outputs and 1 trigger input on the front panel. There are 16 additional digital outputs and 16 digital inputs available at the rear panel of the EPC 10 USB. The digital outputs can be used to control external devices like perfusion systems or video imaging systems. The versatility of the EPC 10 USB originates from its adjustment and control capabilities at the software level. Leak currents, capacitances, and series resistance can instantly be neutralized automatically while you still retain the possibility of full manual control of the amplifier.

Voltage- and Current-Clamp experimental protocols are easily automated; not only ensuring simplicity, great speed and accuracy but also providing enormous flexibility for the integration of extensions such as photometric and fluorescence measurements.

Features:

- Full computer control (Mac and Windows based)
- Can be used with PatchMaster on Windows and Mac, and with PatchMaster Pro and TIDA on Windows.
- EPC DLL (dynamic link library) is available to control the amplifier from your own applications (Windows)
- Automatic self-test and calibration
- Automatic Capacitance neutralization
- Capacitance tracking
- Automatic leak subtraction
- Integration with the LIH 8+8 AD/DA interface with isolated USB 2.0 connection to the host computer
- ultra slim-line headstage design with improved noise performance
- True Current Clamp mode
- Low Frequency Voltage Clamp
- Gentle Switch option to CC mode (injection current is equal to I_{mon} in VC)
- 16 Digital outputs
- true noise measurements from 100 Hz to 15 kHz
- Built in sound capabilities
- Can be extended with an additional LIH 8+8
- Digital I/O connector for EPC 8 or TIB 14S
- Resistor switching headstage with three gain ranges that can be switched during the experiment

Applications:

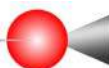
- Low noise single channel recordings
- Low noise whole-cell patch clamp recordings: voltage clamp and current clamp / LFVC
- Loose patch recordings
- Intracellular voltage recordings with high resistance electrodes.
- Field potential recordings with metal microelectrodes
- Recording from artificial membranes (Bilayer recordings)
- Study of Long Term Potentiation (LTP) and Long Term Depression (LTD)
- Study of Exocytosis/Endocytosis or Synaptic transmission by
 - Measurement of whole-cell membrane capacitance (Patchmaster)
 - Measurement of on-cell membrane capacitance (Patchmaster)
 - Detection of released substances (amperometry with e.g. carbon fiber electrodes)
 - Detection of released substances under a patch (patch amperometry)

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