

Bio-Logic SAS

is pleased to announce a multiplexer dedicated to Micro Electrode Array (MEA) application, MP-MEA.

Thanks to its specific configuration, **MP-MEA** enables the user to perform:

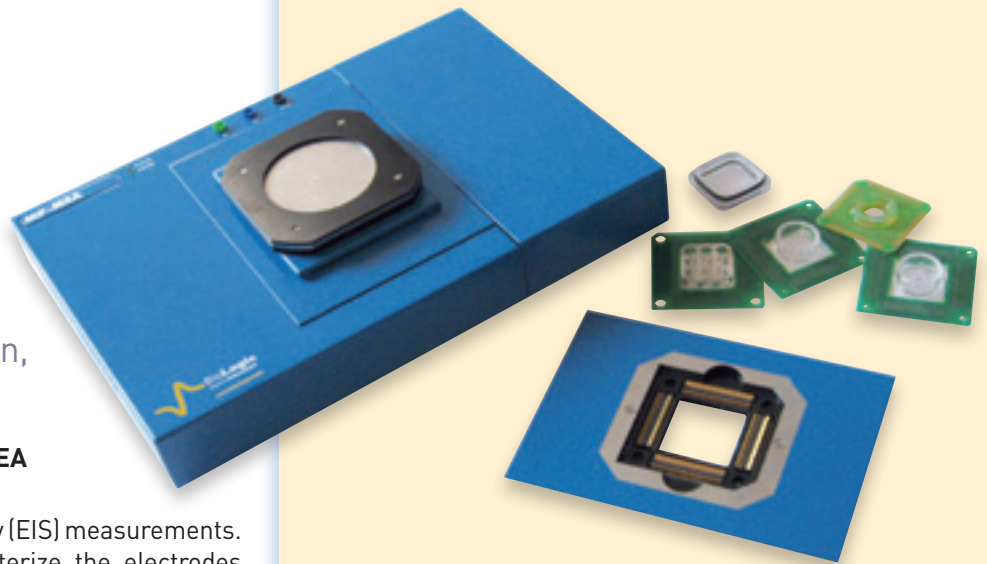
- Electrochemical Impedance Spectroscopy (EIS) measurements. EIS investigations are useful to characterize the electrodes impedance, which is critical for electrophysiology applications,
- standard electrochemical investigations such as potentiometric methods or galvanometric methods. Standard electrochemical techniques may be used to clean (decrease the electrode impedance) or modify the electrode surface.

MP-MEA enables the user to reach high level of performances in terms of:

- accuracy of the low current measurement (resolution of few nA),
- accuracy of the impedance measurement (1%, 1° at 100 kHz),
- wide range of impedance measurements (10^{-2} to 10^9 Ohm for an accuracy of 1%; 1°).

Several MEA adaptors are offered to fit most of the commercial MEA geometries. The MEA connection is designed to be modular, so it can be modified in agreement with a customized MEA shapes.

The connection of **MP-MEA** to a true potentiostat/galvanostat/EIS analyzer (SP-200/SP-300) allows the user to perform measurements with a 3-electrode set-up *i.e* with up to 256 working, one reference and one counter electrode. In that case, the reference or the counter electrode has to be connected externally.



Electrophysiology

GENERAL SPECIFICATIONS

- 256 working electrodes
- Impedance measurement up to 100 kHz (1%, 1°)
- 3 electrodes setup
- Built-in Faraday cage
- Adaptor to fit most of MEAs
- Configuration for 64, 128 and 256 electrodes

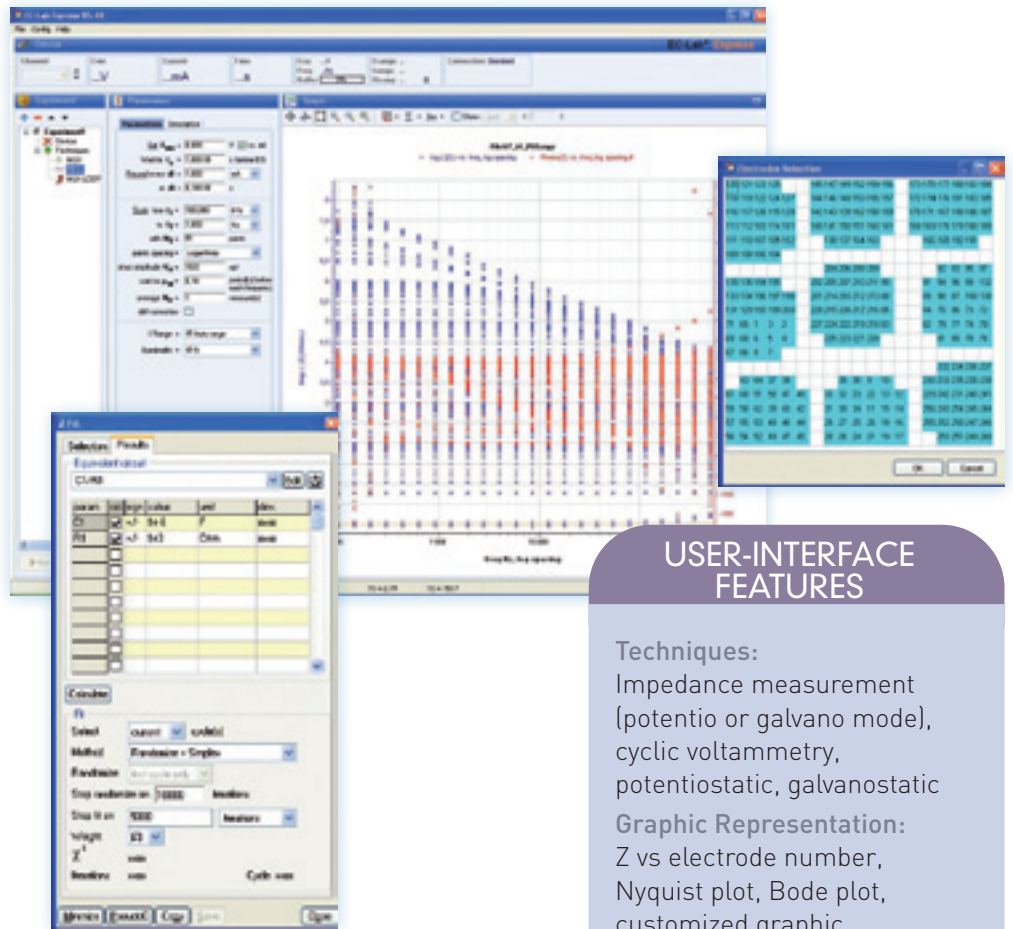
Sensor

MONITORING SOFTWARE

MP-MEA is controlled by **EC-Lab® Express** software.

This browser-based interface allows the user to easily create complex linked experiments, for instance EIS characterizations of the MEA after an electroplating process. The graphic display is designed to have a quick overview of the resulting data. Several standard plots are proposed such as Z vs electrode number, Nyquist or Bode representation, customized representations...

Moreover, the resulting data can be treated using the analysis tool provided with **EC-Lab® Express**. For example, EIS data can be modeled with the **Zfit** tool.



USER-INTERFACE FEATURES

- Techniques:** Impedance measurement (potentio or galvano mode), cyclic voltammetry, potentiostatic, galvanostatic
- Graphic Representation:** Z vs electrode number, Nyquist plot, Bode plot, customized graphic
- Treatment or Analysis:** Zfit for impedance modeling, numerical filtering, mathematical tool

SPECIFICATIONS

Cell control

Number of working electrodes	256
Switching time	8 ms
Data sampling	1 000 000 samples/second
Filtering	50 kHz, 1 kHz, 5 Hz low pass 4 poles Sallen-Key filters
Impedance	$> 10^{10}$ Ohm < 3 pF
Bias current	< 10 pA
Bandwidth	1 MHz

Current measurement

Maximum	0.5 A continuous
Maximum resolution	0.004% of the range (76 aA max)
Ranges	+/-500 mA, 100 mA, 10 mA, 1 mA... down to 10 pA

Voltage measurement

Range	+/- 10 V
Resolution	300 μ V for +/- 10 V range down to 5 μ V for +/- 25 mV range

Impedance Analyzer

Frequency range	10 μ Hz to 200 kHz (10 ppm of the setting)
Sinus amplitude	potentio 0.5 mV to 2.5 V with 1 mV resolution galvano 0.1 to 100% of the current range with resolution 0.004% of the range
Accuracy	(see contour plot)

General

PC requirement	Windows XP, Vista, 7 (32 and 64 bits)
Communication	Ethernet or USB (SP-200/SP-300 instrument)
Dimension	307 x 210 x 50 mm

Contour plot

