

A REAL Bipotentiostat for ...

**Rotating
ring disk
electrode**



**SECM
coupling**

**AFM
Coupling**

...your electrochemical applications with two working electrodes

The Bipotentiostat BiStat combines two independent potentiostats / galvanostats boards in the same chassis. The channel boards can also be synchronized to perform different experiments at the same time. One of the channels has a very high input impedance (10^{14} Ohms). Thus the user can measure very low currents for sensitive electrochemical applications (sensors). The BiStat can also be used to make plating, to study corrosion or to characterize battery materials.

You can connect the **BiStat** directly to the PC with a USB port 2.0. The alternative Ethernet communication allows installation on a Local Area Network. Thus, the BiStat is a multi-users instrument. Moreover, each channel has analog inputs / outputs to manage external instruments (rotating ring disk electrode) and record the generated data.

The BiStat with **EC-Lab (v9.16) software** is the ultimate electrochemical workstation with more than 35 protocols and many analysis tools. The BiStat is the only instrument capable to switch quickly from a potential control to a current control.

General Specifications :

- Current range:

channel 1: from 1 nA up to 400 mA with a 76 fA resolution

channel 2: from 10 μ A up to 400 mA with a 760 pA resolution

- 20 V Adjustable Reference Voltage

- Resolution: 300 μ V programmable down to 5 μ V by adjusting the dynamic range

- channel 1 and 2 can be synchronized and boosted up to 80 A.

EC-Lab®: an efficient monitoring software

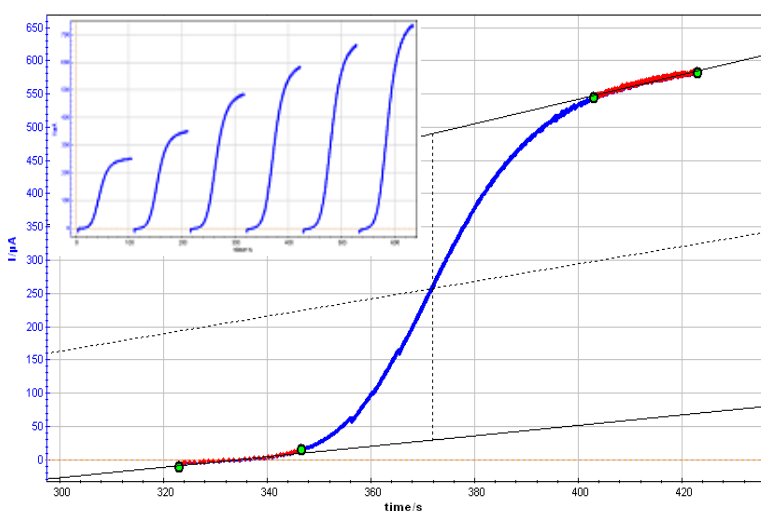
The BiStat is provided with EC-Lab® software (v9.16). This software offers many usual techniques including several tools to build complex protocols. The created protocols can be saved as “**Customs Applications**”.

Each parameter can be modified while the experiment is running. All the modifications made are automatically saved in the raw data file. The tool bars and the windows can be adjusted by the user.

The technology of the BiStat allows the user to define data sampling and recording conditions without any limit on the recorded data point number. The BiStat is a complete autonomous instrument during the experiment thanks to its operating system.

Each channel can execute a technique different from the other channel simultaneously or independently.

C:\EC-Lab\Data\Samples\RDElink_MP_1_MP.mpr
→ I vs. time, loop 3



Included Techniques

- ◆ Modular potentiostat (MP) and Galvano (MG)
- ◆ Open Circuit Potential
- ◆ Cyclic Voltammetry
- ◆ Staircase Voltammetry
- ◆ ChronoAmperometry
- ◆ Potentiometry/ Coulometry
- ◆ DPV, SWV, DPA
- ◆ Galvanostatic cycling GCPL
- ◆ Potentiodynamic cycling
- ◆ Alternated Pulse Galvano cycling
- ◆ Linear Polarization
- ◆ Cyclic Polarization
- ◆ ZRA, ZVC
- ◆ Potentiodynamic and potentiostatic Multipitting

The graphic window can be shared into different graphs. Each one is active and independent from the others. The user can at the same time follow the experiment evolution and analyze data previously stored. Several graphic tools are also available such as linear fit, integral fit, Min/Max determination, peak analysis and wave analysis in convective regime .

This window can have a double Y-axis. Axes can be modified by the user. A “Axis processing” option allows less conventional plots. The properties to configure traces (color, style, ...) and units are available for the user.

Potentiostat/Galvanostat board

• Cell Control

Converters: 16-bit dynamic DAC; 12-bit attenuation DAC ; 12-bit shift DAC

Compliance Voltage: 20V range adjustable from ± 10 V to 0-20 V

Maximum Current : ± 400 mA continuous with thermal shut-down protection, ± 2.4 A in peak.

Maximum potential resolution : 300 μ V on 20 V, range programmable down to 5 μ V on 200 mV.

Maximum current resolution : 0.004 % of the dynamic range, programmable down to 760 pA on the 10 μ A range and to 76 pA on the 1 nA range.

Accuracy (DC): < 0.1% FSR*

Rise time (10% - 90%): < 2 μ S (no load)

• Current measurement

Converter : 16-bit

Ranges:

Channel 1: ± 1 nA, ± 10 nA, ± 100 nA, ± 1 μ A, ± 10 μ A, ± 100 μ A, ± 1 mA, ± 10 mA, ± 100 mA.

Channel 2: ± 10 μ A, ± 100 μ A, ± 1 mA, ± 10 mA, ± 100 mA, ± 1 A (limited to ± 400 mA DC)

Resolution : 0.004 % of range

Acquisition Speed : 200,000 samples/second

Accuracy (DC) : < 0.1% FSR*

• Potential measurement

Converters: 16-bit ADC ; 12-bit DC shift DAC's

Ranges: ± 2.5 V, ± 5 V, ± 10 V plus ± 10 V adjustable

Resolution : 0.0015 % of the range, up to 75 μ V

Acquisition Speed: 200,000 samples/second

Accuracy (DC) : < 0.1% FSR*

• Reference Electrodes

Inputs: 3 potential measurements leads, with 2 differential voltage measurements

Impedance: 10^{12} ohms in parallel with 20 pF

Bias current : < 5 pA

• Additional Inputs/Outputs

Each potentiostat/Galvanostat board has the following inputs / outputs :

2 analog inputs: 16-bit resolution with automatic ranges of ± 2.5 V, ± 5 V, ± 10 V

1 external input trigger: TTL level

1 external output trigger: TTL level

• Power : 85-264 V AC, 47-440 Hz

• Compatible with PAR RDE 636

• Drivers LabView et Vis available

Specifications subject to change

*FSR: Full Scale Range