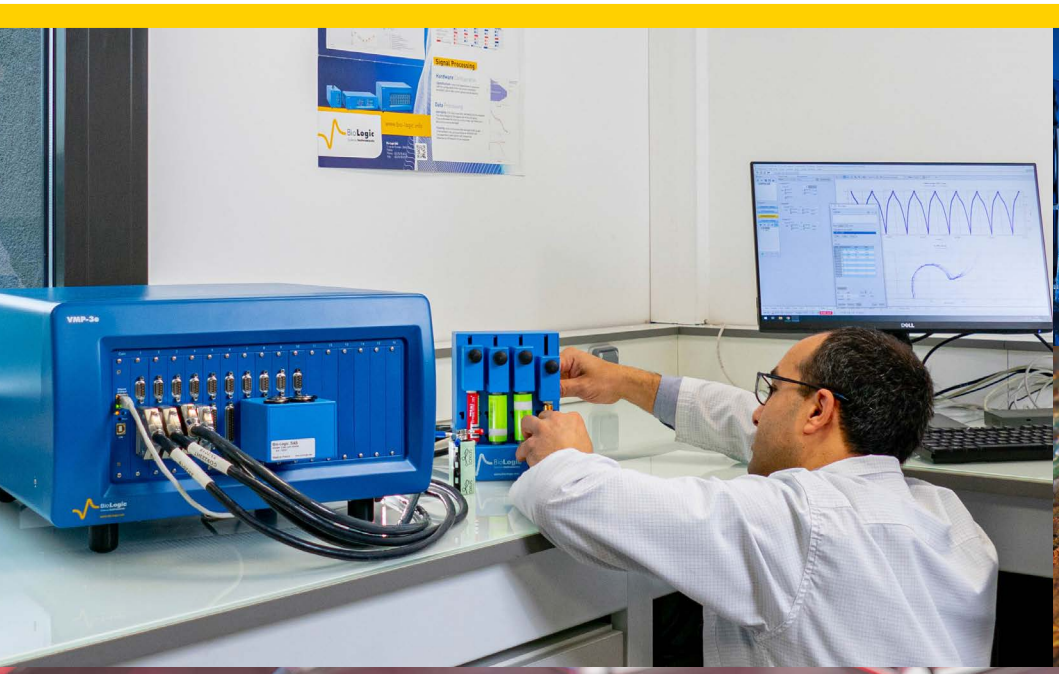
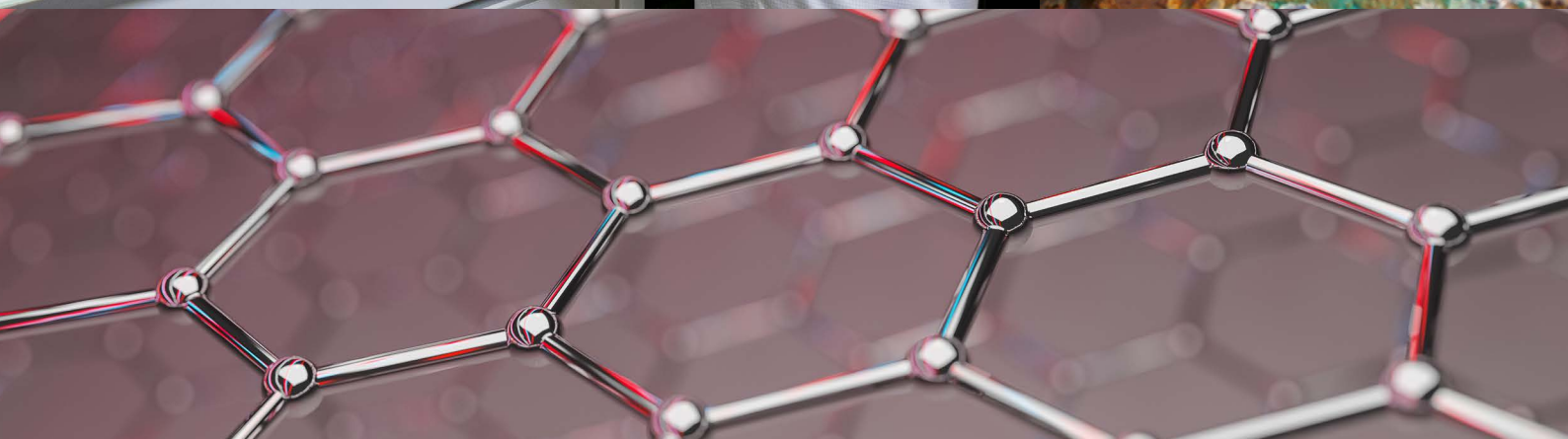
BioLogic

Powerful, high-performance measurement solutions

Essential Potentiostats.





Benchmark software.
High-performance hardware.

The perfect marriage of performance and control.

Modular, durable, single and multi-channel electrochemical workstations designed to meet both classical and demanding electrochemical research needs, the Essential range features **EIS up to 1 MHz**, with measureable current from **1 A down to 20 nA**, and the possibility of extending up to **800 A with boosters**.

No compromise has been made on quality in a range of potentiostats driven by EC-Lab® software, the same control interface that drives BioLogic's Premium instruments.

Advanced functionality such as Ethernet capability will help you manage multiple instruments from one computer as well as facilitate group-working. And **Quality Indicators** make the validation of EIS measurements simple.

Visit our YouTube channel and Learning Centre for scientific articles, EC-Lab® tutorials and product support information.
https://www.biologic.net/topics/

YouTube Channel

Essential measurement tools for electrochemists

Specification

Minimum/Maximum Capabilities

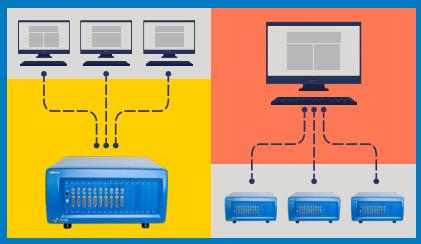
Channels: 1 to 16
Standard Voltage: ±10 V
Max Voltage: +60 V
Current: 20 nA to 800 A
EIS: Up to 1 MHz

Multichannel

Single channel

Ethernet capability for increased flexibility/improved group working

Share an instrument's channels via multiple PCs, or share multiple instruments from your PC.



The most comprehensive and user-friendly software available

EC-Lab® is widely regarded as the **benchmark control and analysis software** by scientists across the globe. As simple to use as it is powerful, EC-Lab® offers a wide range of unique functionality that can help drive your projects forward.

Preset or bespoke techniques
80+ techniques

Integrated graphics
Customize graphs within EC-Lab®

Experiment sequence builder
Build sequential experiments based on conditional limits

External device control
(multiple devices)

Extensive analysis functionality
Including Z Fit for advanced EIS modeling

No need to plan experiments
Modify measurements "on the fly"

SP-50e: The perfect instrument for education & general use

Channel capability: 1
Voltage: ±10 V
Current: ± 1 A down to 20 nA

- Highly cost-effective workstation- now with EIS
- Simple, easy-to-use, compact chassis
- Ideal for general use and education - perfect for new researchers
- Exploit the power and performance of EC-Lab® with a limited budget

SP-150e: From tens of nA to 800 A The power to do more

- Two channels: perfect for rotating ring disk electrodes (RRDE)
- Highly modular potentiostat. Users can easily add high current boosters (no factory upgrade required)
- Future proof: instrument easily upgraded with EIS and a new channel

Channel capability: 2
Voltage: ±10 V
Adjustable between -20 V to +20 V
Current: ± 1 A down to 20 nA

VSP: A versatile, 5-channel, research-grade, instrument

Channel capability: 5
Voltage: ±10 V
Adjustable between -20 V to +20 V
Current: ± 0.4 A down to 20 nA

- Versatile, modular instrument for general needs
- Future-proof: instrument can be easily upgraded with EIS, high current options and new channels
- Optional 4 A booster available

VSP-3e: Tailor-made for energy applications

Channel capability: 8
Voltage: ±10 V
Adjustable between -20 V to +20 V
Current: ± 1 A down to 20 nA

- Compact, upright design reduces instrument footprint and saves valuable laboratory space
- Future-proof: instrument easily upgraded with EIS, high current options and new channels

VMP-3e: Versatility, power and performance. A do-it-all measurement tool.

Channel capability: 16
Voltage: ±10 V
Adjustable between -20 V to +20 V
Current: ± 1 A down to 20 nA

- Research-grade instrument with 16 channel capability
- Easily upgraded by user: add channel boards or boosters
- Connect each potentiostat to an external high current booster channel – perfect for battery research/testing
- Ethernet capability via LAN – connect several computers/users to the same unit to facilitate group working

Full specifications for boosters can be found on the next page

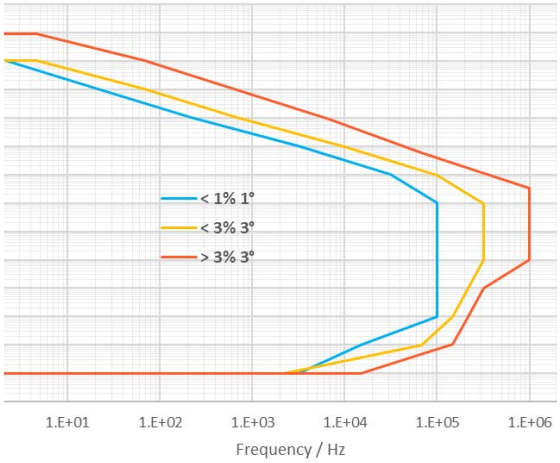
Add-ons: Customize your potentiostat to match your field of interest.

Modules by potentiostat

Options	Specification	Application	SP-50e	SP-150e	VSP	VSP-3e	VMP-3e
High Power booster	• 20 V boosters: 2, 5, 10, 20 A • ±3 V at ±80 A • 5 V at ±100 A • 60 V at 50 A* • 12 V at 200 A* *Up to 4 boosters can be connected to increase current capability	Battery, supercapacitor, fuel cell, electroplating & electrolysis, Supercapacitor or fuel cell characterization Battery testing Battery pack characterization Large battery cells, supercapacitors or fuel cell characterization	✗	✓	✓	✓	✓
EIS	Up to 1 MHz	EIS measurements can be made and validated with BioLogic EIS Quality Indicators	✓	✓	✓	✓	✓

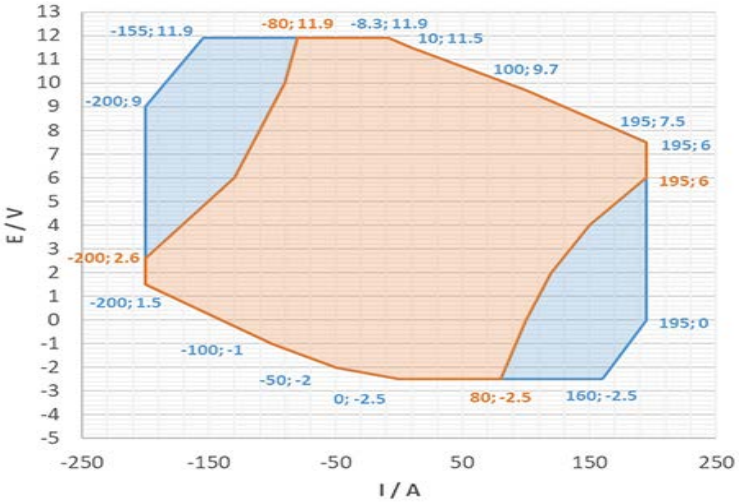
Contour plots.

EIS



VMP3 contour plot (example applicable to rest of Essential Potentiostat range)

High Power



Contour plot demonstrating the high-power operating area of the FlexP boosters

Future-proofed potentiostats
Upgrade your own instrument, quickly, in your lab.
So your potentiostat grows with your needs.

Channel Specifications

Features		Essential Specification
EIS capability		10 µHz to 1 MHz
Analog Ramp Generator		N/A
Floating option		CE to Ground
Filters		Software
Acquisition time		20 µs
Electrode connections		2, 3, 4, 5
IR compensation		Manual, EIS, current interrupt (software)
Current		
Maximum current		± 1A for "e-type" boards
Current range (standard board)		6: 10 µA to 1 A
Lowest accuracy (standard board)		±20 nA on 10 µA range
Lowest resolution (standard board)		0.8 nA on 10 µA range
Current booster	Internal	4 A for VSP only
	External	2, 5, 10, 20, 80, 100 A, 200 A (FlexP0012), 50A (FlexP0060)
Input impedance		1 TΩ (//20 pF)
Voltage		
Compliance		±10 V
Max applied potential		0-20 V adjustable
Resolution		5 µV on 200 mV
Accuracy		< 5 mV on ±2.5 V
Maximum scan rate		200 V/s

Only with EC-Lab®

Modify-on-the-fly

No need to plan experiments – you modify as you go, giving you increased flexibility, easier management of long-term experiments and easier set-ups.

Full Cell Control

Measure (not only control) the voltage between positive and negative electrodes for batteries and fuel cells, just as you do with current.

Temperature Control Server

Manage climatic chambers from EC-Lab®, allowing users to perform automatic cycling with complex temperature profiles.

Z inst

Compensate drift during EIS measurements, for example, battery or specimens for corrosion studies.

Booster Specifications

	2/4/5 A	8/10/20 A	80 A/HCP-803	100 A/HCP-1005	FlexP0060	FlexP0012
Current						
Compliance	2 A: ±2 A, 4 A: ±4 A, 5 A: ±5 A	10 A: ±10 A, 20 A: ±20 A	±80 A	±100 A	-50A; +49A	-200A ; +195A
Accuracy	2 A range: < 4 mA 4 A range: < 8 mA 5 A range: < 10 mA	10 A range: < 20 mA 20 A range: < 40 mA	80 A range: < 160 mA	100 A range: < 200 mA	0.1%+/-0.01% FSR	0.2%+/-0.02% FSR
Voltage						
Compliance	Adjustable ±10 V range	Adjustable ±10 V range	±3 V	0.6 - 5 V	0; 60V	-2.5; 11.9V
Control	±20 V	±20 V	±3/5 V	±3/5 V	0; 60V	-2.5; 11.9V
Features						
EIS frequencies	2 A: up to 150 kHz, 4 A: up to 130 kHz, 5 A: up to 120 kHz	10 A: up to 80 kHz, 20 A: up to 80 kHz	up to 15 kHz,	up to 10 kHz	10 kHz	10 kHz
Floating mode	No	No	No	No	5.6 kOhm	5.6 kOhm
Rise/fall time (potentio, no load)	15 µs	25 to 60 µs	95 µs	1.7 ms	<10 µs	<20 µs
Parallel ability	No	No	No	No	Yes (up to 4 units)	Yes (up to 4 units)
Connection (terminal leads)	2, 3, 4, 5	2, 3, 4, 5	2, 3, 4, 5	2, 3, 4, 5	2 & 4	2 & 4
General						
Safety	Security to open circuit (TTL level)	Security to open circuit (TTL level)	Security to open circuit (TTL level)	Security to open circuit (TTL level) Temperature probe included	Security to open circuit (TTL level) Temperature probe included	Security to open circuit (TTL level) Temperature probe included

Chassis Specifications

Essential	SP-50e	SP-150e	VSP	VSP-3e	VMP3e
Channels available	1	2	5	8	16
Interfaces	Ethernet, USB 2.0	Ethernet, USB 2.0	Ethernet, USB 2.0	Ethernet, USB 2.0	Ethernet, USB 2.0
Dimension HxWxD	209 x 136 x 372 mm	209 x 136 x 372 mm	95 x 435 x 335 mm	405 x 225 x 320 mm	262 x 495 x 465 mm
Weight	3.9 kg	3.9 kg	8 kg	12 kg	15 kg
Power Requirement	110 W	110 W	300 W	1000 W	850 W

A potentiostat for every possible application.

ENERGY STORAGE & CONVERSION
Batteries
Fuel cells & electrolyzers
Supercapacitors
Photovoltaics
Redox Flow Batteries
RESEARCH ELECTROCHEMISTRY
Analytical Electrochemistry
Sensors
Corrosion
MATERIAL SCIENCE

With the largest, most comprehensive range of potentiostats of any manufacturer, you can be sure to find a BioLogic instrument that suits your application.

Here to help.

Online/offline - wherever you are...

BioLogic prides itself in the quality of its potentiostats. We build robust, reliable instruments designed to withstand the rigors of time and the laboratory. But if you do ever encounter a problem with your instrument, you can rest assured that our global support network will be close at hand to help find you a solution quickly and effectively.

And if you just need more information, or perhaps just a little inspiration to help you with your project, you can browse our ever-growing support database of over 100 Learning Centre articles, application/technical notes and support videos at **www.biologic.net.**

Need high-level EIS measurements? Check out our Premium Range at www.biologic.net

Innovation.

Innovation is engrained in our commercial DNA. The first multi-channel computer-controlled potentiostat (MacPile, 1991), Ethernet connectivity and Embedded EIS are just some of the BioLogic innovations helping scientists around the globe. Our high-quality, high-performance instruments have played a pivotal role in leading research projects since 1983.

www.biologic.net/about us

www.biologic.net

Shaping the future. Together.