BioLogic

Your application needs more power...

... deliver it with a booster!

- BATTERIES / ELECTRIC VEHICLE

- FUEL CELL TESTING

- SOLAR CELLS

- SUPERCAPACITORS

- PLATING

Bio-Logic has a full range of boosters and load boxes to expand the capabilities of each channel of your Bio-Logic potentiostat/galvanostat. The modular design of our boosters and loads allows them to be installed in the potentiostat chassis, or connected externally.

An **external booster** chassis can support up to 20 amps maximum current, divided among several boards, for example one 10 A board, one 5 A board and two 2 A boards. Potentiostat chassis can hold to one **internal** 4 A booster for the VSP.

Electronic loads are available for fuel cell testing. The 500 W load supports 50 A / 10 V, and can be located in a separate chassis, or used as a controlled load in the CLB-500 chassis.

Booster options can be added as plug-in modules or installed in an external chassis. When connected to a potentiostat the booster or load is automatically detected by EC-Lab® or EC-Lab® Express software.

All our external power boosters are plug-and-play. They can be connected and disconnected from the channel board, and reconnected to another one without shutting down the instrument.

CONFIGURATIONS:

Boosters:
c External: • ±2 A, ±5 A, ±10 A, ±20 A on ±10 V
                    adjustable from -20 to +20 V
                    • ±80 A on ±3 V

c Internal kit: ±4 A on 20 V

Electronic loads:
c External and Internal: 500 W (50 A / 10 V)

GENERAL SPECIFICATIONS:

c Booster current range included in the autoranging

c 20 V Adjustable Reference Voltage (except 80 A)

c EIS capability

c 500 W electronic load with two current ranges

FUEL CELLS AND BATTERIES

With the growing interest in new energy sources for electrical and hybrid vehicles, current boosters are required to do research and ageing tests on standard commercial batteries or fuel cells. The 80 A booster and load boxes are more dedicated to study fuel cell elements.

The included EC-Lab® and EC-Lab® Express software provide analytical tools needed for battery and fuel cell testing, such as a very efficient "drift correction" tool, and multisine EIS techniques. These tools allow fast and accurate EIS measurements on batteries or fuel cell at power.

SUPERCAPACITORS

A very quick rise and fall time make the 80 A booster ideal for testing supercapacitors. It can perform EIS measurements on devices to very low impedance levels, down to 100 µOhms.
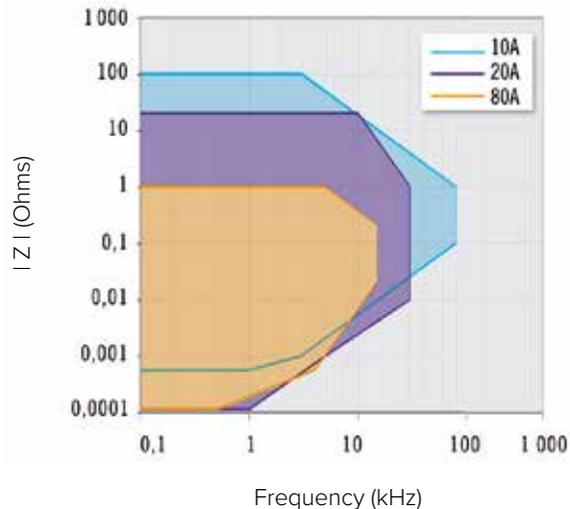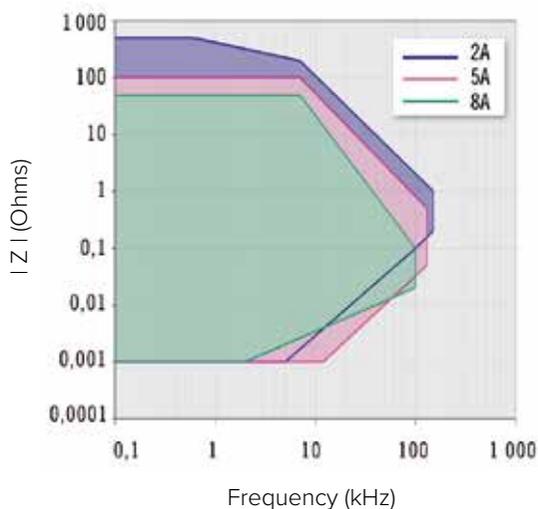
INTERCALATION COMPOUNDS

Intercalation compounds and small battery cells can be studied with an external booster chassis and up to eight 2 A booster channels. The included software supports simultaneous EIS measurements on each electrode material according to a reference electrode.

STACK POWER SOURCES

Several channels can be used to study the different elements of a fuel cell stack simultaneously. For example, a 20 A booster can be coupled with a master channel in a VMP3, and used with VMP3 slave channels. Our systems have been used this way to study each element of a fuel cell stack or battery cells in series.

ACCURACY CONTOUR MAP (1 % - 1°)

	2A
	5A
	8A

|Z| (Ohms)
Frequency (kHz)

	10A
	20A
	80A

|Z| (Ohms)
Frequency (kHz)

BOOSTER BOARDS

Cell control	2 / 4 / 5 A	10 A	20 A	80 A
Connection	2, 3, 4, 5 terminal leads			
Compliance	10 V range adjustable			-3; +3 V
Maximum current	±2 / ±4 / ±5 A	±10 A	±20 A	±80 A
Maximum potential	±20 V	±20 V	±20 V	±3 V
Rise time and fall time - Potentio	15 µs	25 µs	60 µs	95 µs
Galvano	40 µs	50 µs	120 µs	150 µs

Measurement	2 / 4 / 5 A	10 A	20 A	80 A
Potential accuracy	< 0,1 % FSR*	< 0,1 % FSR*	< 0,1 % FSR*	< 0,1 % FSR*
Current accuracy	< 0,1 % FSR*	< 0,1 % FSR*	< 0,1 % FSR*	< 0,1 % FSR*
Potential noise (peak to peak 0-100 kHz)	0.6 mV	0.6 mV	0.6 mV	0.6 mV
Current noise (peak to peak 0-100 kHz)	1 mA at 2 / 4 / 5 A	3 mA at 10 A	6 mA at 20 A	20 mA at 80 A

Electrometer	2 / 4 / 5 A	10 A	20 A	80 A
Inputs	3 potential measurements			
Impedance	10^{10} Ohms	10^{10} Ohms	10^{10} Ohms	10^{10} Ohms
Bandwidth	1 MHz	1 MHz	1 MHz	1 MHz

Impedance	2 / 4 / 5 A	10 A	20 A	80 A
Frequency range (accuracy 1%, 1°)	10 µHz to 150/130/125 kHz	10 µHz to 80 kHz	10 µHz to 30 kHz	10 µHz to 15 kHz
Amplitude	1 mV peak to peak to 1 Vpp. 0.1 % to 50 % of the current range			

Auxiliary Inputs/Outputs	2 / 4 / 5 A	10 A	20 A	80 A
1 External input	Security to open circuit (TTL level)			Security to open circuit (TTL level) Emergency push button

General	2 / 4 / 5 A	10 A	20 A	80 A
Dimensions (W:290 x H:130 x L)	105 / 40 / 105 mm	210 mm	430 mm	320 mm
Weight	1 kg / 0.85 kg / 1 kg	12 kg	4.2 kg	4.8 kg

Note: the 2 A booster channels are sold by pieces of 2*2 A double boards

ELECTRONIC LOAD

Cell control

Connection	5 terminal leads
Voltage	0.1 V to 10 V
Maximum current	5 A and 50 A
Maximum current resolution	0.008 % of the range
Maximum potential resolution	300 µV on 10 V dynamic range adjustable
Maximum power	50 W (5 A), 500 W (50 A) @ 40°C
Rise Time	< 3 ms
Acquisition time	200 µs
Acquisition speed	200000 samples/second

Measurement

Potential accuracy	< 0.1 % FSR*
Current accuracy	< 0.5 % FSR*
Current noise (peak to peak 0-100 kHz)	< 0.05 % FSR*

Electrometer

Inputs	3 potential measurements
Impedance	10^{10} Ohms
Bandwidth	1 MHz

Impedance

Frequency range	10 µHz to 10 kHz
Amplitude	1 mVpp to 1 Vpp 0.1 % to 50 % of the current range
Accuracy	2 %, 2°

General

1 security Input	TTL level to open circuit
1 emergency stop push button	
Dimensions	260 x 495 x 465 mm (H x W x L)
Weight	3.4 kg
Cell cable length	Power: 50 cm, Senses: 50 cm

*FSR: Full Scale Range. Specifications subject to change.

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