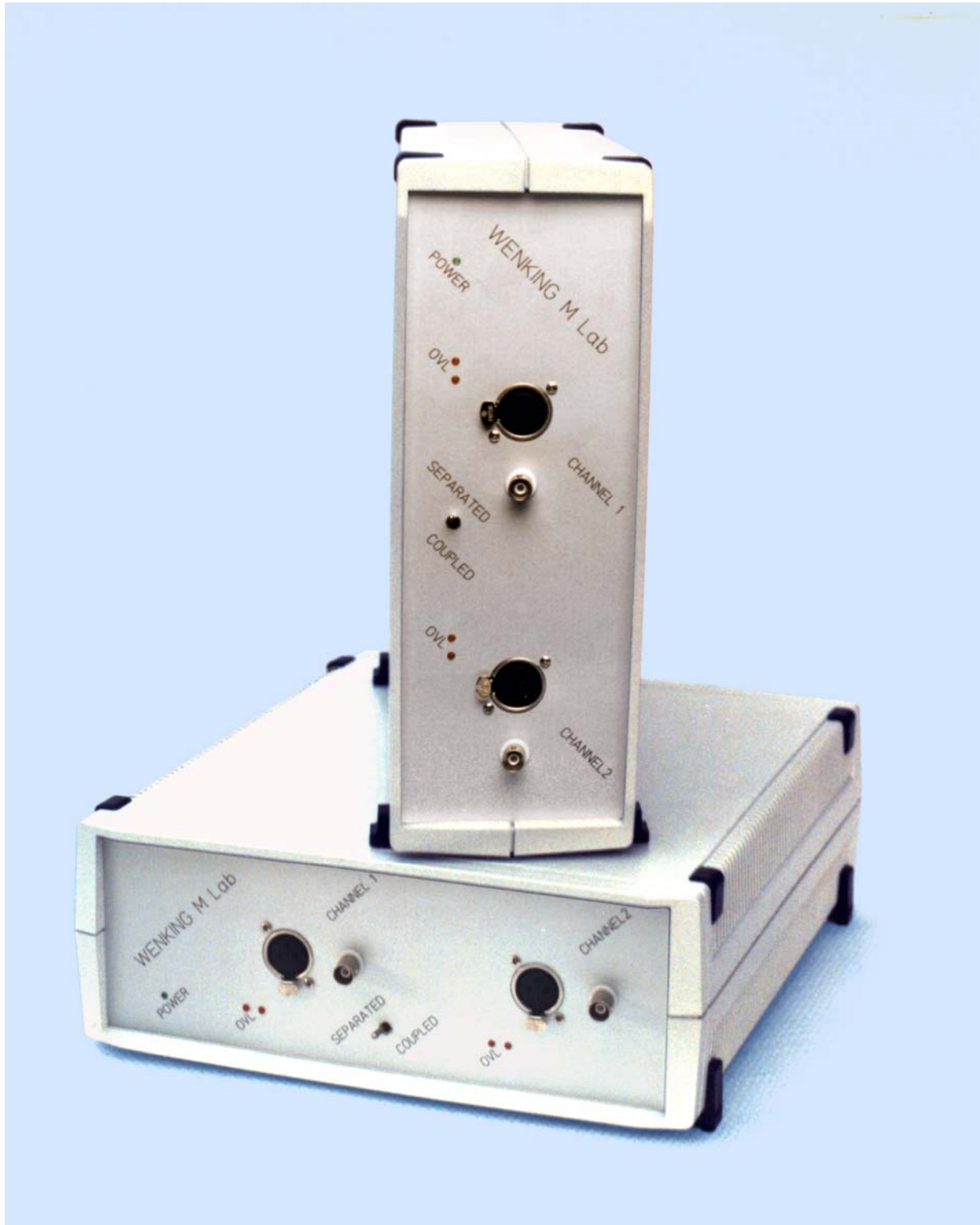


Look: There Are 4 Potentiostats



WENKING[®] M Lab

The Electrochemical System. Two Potentiostats on Board. Plug and Play.



▶ M Lab

is a complete control station for electrochemical cells. Each M Lab contains two independent potentiostats. A powerful microcomputer controls the function generator, the operation modes and range settings, stores the data and communicates with the personal computer. One serial interface connects the M Lab to a personal computer, another one allows to connect it to other M Labs.

▶ Users and Usage

For chemists, M Lab measures voltamograms or produces preparates.
For material scientists, M Lab records current - potential curves and calculates corrosion data.
For galvanists, M Lab plates surfaces or measures the plating thickness.
For battery researchers, M Lab charges and discharges accumulators and records the cycles.
For a physicist, M Lab is a programmable four - quadrant voltage- or current source which got a recording unit. Or a characteristic - tracer which operates over 10 decades of current.

▶ Versatility

M Lab is the multimeter of electrochemists.
It is a coulombmeter resolving picoampereseconds.
It is a electrometer (potential meter) having 10^{12} Ohms input resistance.
It is function generator producing constants, pulses, ramps or triangles.
It is a zero - resistance ammeter measuring currents from 50 pA up to 100 mA.
It is potentiostat with 2 V / μ s rise time.
It is programmable low-impedance voltage source from -4096 mV to + 4096 mV.
It is a precision current source generating currents from +/- 1 nA up to +/- 100 mA.

▶ Economy

Why 2 potentiostats in one housing? Small potentiostatic amplifiers cost much less than the analogue - to - digital converters and interface electronics. Therefore, a second potentiostat was added to the controller unit to achieve perfect price-to power ratio.

▶ Exceptionalness

There is still another reason to have two channels in one housing. One M Lab may control two independent cells. However, if required, the two potentiostats may be combined to a bi - potentiostat to control two electrodes in one cell.

▶ More than Two

M Lab has been designed from the roots as multi - channel - instrument. Up to 20 M Lab units can be linked to another, forming a daisy chain which occupies only one standard serial port of your personal computer. When three or more M Labs shall be combined, we recommend to order the 19" - system housing, resulting in extraordinary low price - per - channel costs.



Software

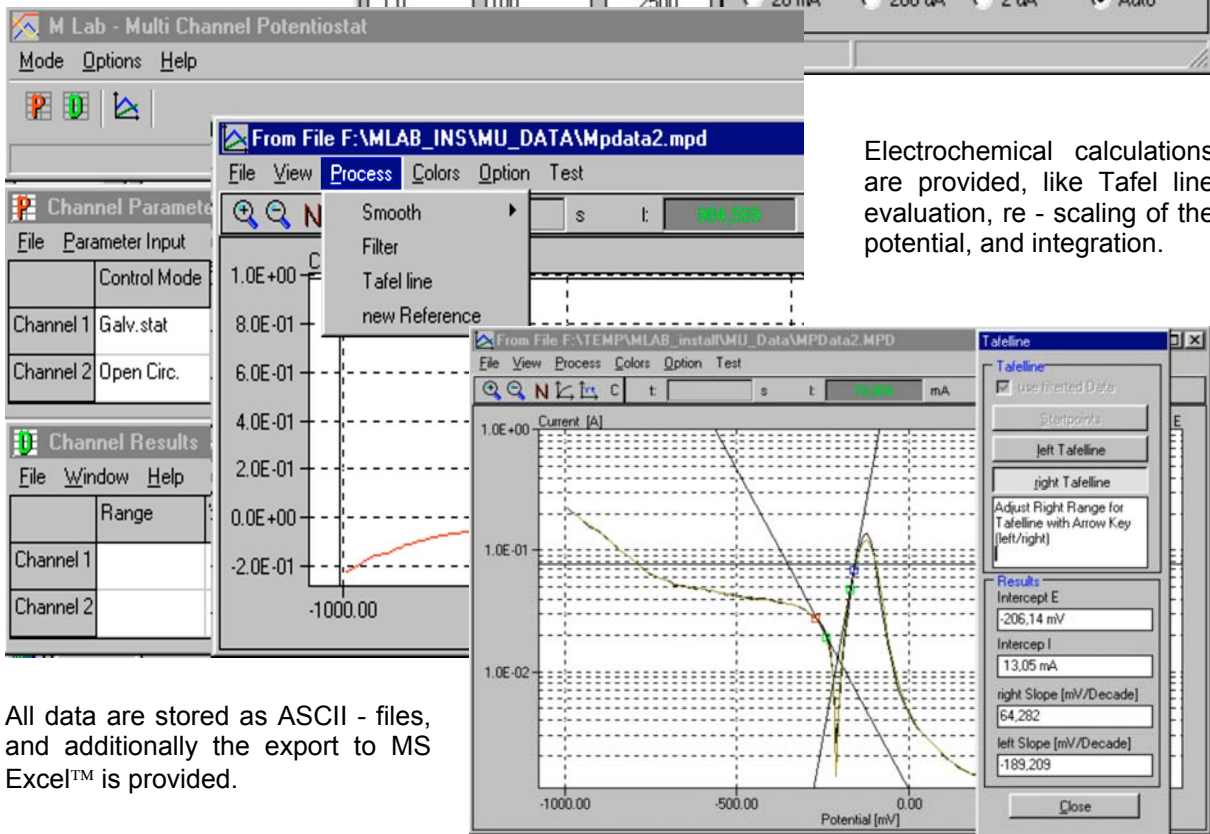
Of course, the M Lab is controlled from your computer desktop. Smart interactive spread sheets help you to keep oversight during all set-up- and program tasks. In addition, for each single a virtual front panel allows to operate this channel like a common potentiostat.

Channel	Control Mode	Record	Scan Mode	Range	Start	Slope	Stop	Precision	total Duration	Timestep	File Name
Channel 1	Pot.stat	running	Const.	Auto Range	-970 mV	0.0	3200 mV	10	00:00:00	100 [ms]	
Channel 2	Open Circ.	stopped	Ramp	100 mA	-970 mV	0.01 mV/s	0	1	99:59:59	500 [ms]	F:\TEMP\ML
Channel 3	Pot.stat	Stop	Const.	Auto Range		0.0	-?	1	00:00:00	200 [ms]	
Channel 4	Galv.stat	Stop	Ramp	100 mA				2			
Channel 4	Open Circ.	Stop	Trian.	10 mA	0	0.2 mV/s	670.0 mV	5	00:01:46	500 [ms]	F:\TEMP\ML
Channel 5	Galv.stat	running	Const.	100 uA	-450 uA	10 uA/s	550 uA	10	1000 s	500 [ms]	
Channel 6	Open Circ.	Pause	Trian.	100 nA	330.0 mV	0.2 mV/s	530.0 mV	20	1000 s	500 [ms]	F:\TEMP\ML

Depending on your task, you can operate all channels simultaneously or independent. Running tasks may be supervised by a spread sheet table, or by a multi - graphics display showing the records.

Setup Channel 1

Control Mode <input checked="" type="radio"/> Potentiostat <input type="radio"/> Galvanostat <input type="radio"/> Open Circuit	Scan Mode <input type="radio"/> Constant <input checked="" type="radio"/> Ramp <input type="radio"/> Triangle	Record <input type="radio"/> Start [F3] <input type="radio"/> Stop [F4] <input type="radio"/> Pause [F5]
Scan Parameter Start [mV]: -1000,0 Slope [mV/s]: 10,0000 Stop [mV]: 1500,0 Duration [s]: 250,00 Duration [hh:mm:ss]: 00:04:10		
Sampling Parameter Precision [mV]: 1,0 Step [ms]: 100 Samples: 2500		Current Range <input type="radio"/> 200 mA <input type="radio"/> 2 mA <input type="radio"/> 20 uA <input type="radio"/> 200 nA <input type="radio"/> 20 mA <input type="radio"/> 200 uA <input type="radio"/> 2 uA <input checked="" type="radio"/> Auto

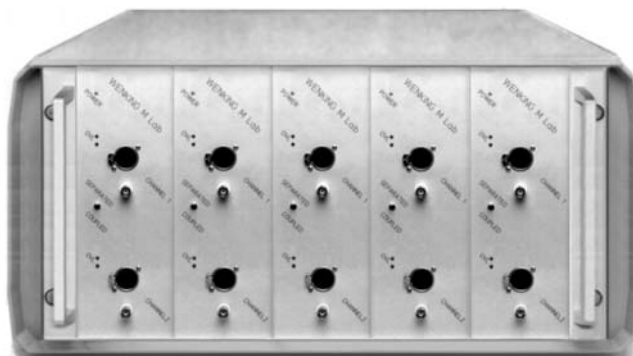


Electrochemical calculations are provided, like Tafel line evaluation, re - scaling of the potential, and integration.

All data are stored as ASCII - files, and additionally the export to MS Excel™ is provided.



M Lab Desktop



M Lab 10 - Channel System

Technical Data

	M Lab 100	M Lab 200
Max. Current per channel	± 100 mA	± 200 mA
Max. CE voltage	± 20 V	± 14 V
Current Ranges	7	7
Current Resolution	100 pA	200 pA

Common Data M Lab 100 and M Lab 200

Input Resistance	> 10 ¹² Ω
Potential control range	± 2 V (± 4 V optionally)
Input bias current	< 1 pA at 25 °C ambient temperature
Unity gain crossover	300 kHz
Current-to-voltage conversion	0,2% ± 1 LSB
Potential accuracy	± 1 mV
A/D and D/A resolution	1 mV (2 mV at +/- 4V)
Interfaces	1 RS 232, 1 RS 485
Dimensions desktop	29 x 11 cm (front) x 31 cm (depth)
Dimensions system housing	19" x 6 HU x 380 mm (depth)

M Lab Variations

The housing determines the maximum power for the potentiostat's output power. In order to achieve best performance and life time. The small M Lab housing limits the power to 6 Watts per channel. Within this frame, all combinations of maximum voltage and maximum current can be realised. For more power, we already have solutions. Just remember: We manufacture electrochemical instrumentation for more than 40 years.

Phone us or E - mail us.



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