

Potentiostat/(Galvanostat) for Standard experiments and for experiments with two working electrodes, often used for measurements at Ring-Disc-Electrodes.

The **PGU BI 1000** is derived from our Impedance Potentiostat/Galvanostat **PGU 10V-1A-IMP-S** and is equipped with an additional BI-Module. It includes all the standard experiments of our Software **EcmWin** and the special RRDE modules for simultaneous measurement at two working electrodes.

Typically it is designed for our rotating ring-disk electrode (RRDE), but it can also be used for other applications where a two channel measurements is necessary, such as dual channel electrochemical detection like AFM or SECM.

The front panel is equipped with buttons and instruments, so basically you can check your set up in manual mode before you start a computer controlled measurement. You can see the potential of the two electrodes, you can apply a potential at both and you can close the control loop for both electrode to see, that your setup works well. After you have checked the state, you can start an experiment like OCP, Holdexperiment, simple or cyclic scan, puls or file based experiment.

The Potentiostat is designed for highest impedance values. To reach this, the reference and standard current module have two separate input amplifiers, one with an input impedance of 10^{13} Ohm for higher speed, the other with an input impedance of 10^{15} Ohm for lower speed and highest impedance. The input impedance of the BI-Module is 10^{14} .



PGU BI 1000

The polarization potential for each electrode is ± 10 V and the maximum current for each is ± 1000 mA. Each current meter has 11 ranges down to 100pA, what's the lowest range. So it can measure down to a few femtoamperes (in a Faraday Cage).

The interface is designed for highest resolution. Two 24 Bit A/D converter allows a sensitive measurement. The scanner has a resolution of 26 Bit, that means a step high of 330nV for each electrode.

The potentiostat / galvanostat use a 3-electrode configuration. It is equipped with additional connectors to measure current and voltage with external instruments. Also external signals can connected to polarize the electrodes. For automation, a trigger input for an external start of measurement is available. With this, measurement can synchronized with other instruments.

Electrical Data PGU BI 1000

Design:	
• Instruments for Potential	2 x Digital, 3 ½digit, ± 1999 mV
• Instrument Compliance Voltage	Analoque as compliance voltage
• Instrument for current	1 x Analogue, 0 - ± 100%, proportional to the selected Range, 1 x digital for the second electrode.
• Set-Potential Potentiostat	1 Input each for extern voltage, 1 Potentiometer internal each
• Set-Potential Galvanostat	1 Input each for extern voltage, 1 Potentiometer internal each
• Current range	manually or autorange, 11 Ranges
• Working mode Potentiostat/Galvanostat	manually and automatic
• OCP / closed circuit	manually and automatic
• recommend frequency range	0 to 100 kHz (depending on the selected current range)
• IR-Drop compensation	Positive feedback via software
Size: (WxHxD)	

Set values	Internal
• Potential	±2000 mV manually and ± 10000 mV via interface
• Potential for current	±1000 mV
	External
• Potential Input	±10V, 1 BNC Connector each, internal via Interface
• Current Input (Potential)	±1V for maximum, 1 BNC Connector each, work added
	Outputs
• Potential Output	±10V each electrode
• Current Output	±1000mA max. as proportional voltage ±10V each electrode
In-/Out Resistance	
Input resistance of the current to voltage converter	approximately $10^{-4} \Omega$
Input resistance of reference electrode	approximately $10^{13/15} \Omega$
Input resistance for external Setpotential	10 K Ω (U- and I-Input)
Rise speed/rise time	100.000V/sec. = 10 μ s/V
Current measurement	Analog
• Current range	1000mA to 100pA
• Resolution	0,5 %
• Current output	11 Ranges, 10000mV
Potential measurement	Analog
• Potential output	±10V 0,3%
• Digital-potentiometer	3½digits, to ±1999mV, 0,5%
Compliance voltage	± 13V
Zero stability:	
• At main power fluctuation of 10%	approximately 1mV
Noise	approximately 500 μ V (50 Hz)
Drift	approximately 500 μ V/day; ca. 50 μ V/°C
Phase shift	smaller 1° at 10 kHz, smaller 6° at 100 kHz
Log. output	No
Autoranging	Yes