



## Overview

### Potentiostat, Galvanostat

- Higher polarisation voltage
- 8 current ranges from 1000 mA down to 100 nA
- Compliance voltage  $\pm 420$  V

## Description

The **PGU 400 V** is a high voltage potentiostat/galvanostat. For applications, where the customer needs a higher compliance voltage than 200 V we designed the **PGU 400 V** with a compliance voltage of  $\pm 420$  V and a polarisation voltage of  $\pm 400$  V. The maximum current range is 1 A. With a higher voltage range up to  $\pm 420$  V and polarisation voltage up to  $\pm 400$  V (if the cell conditions allow this) and output current 1000 mA this **PGU** is designed for special jobs in coating research and development (nano tubes and anodizing).

This potentiostat can be used also in manual mode (for simple experiments). However, according to the experience of recent years, this device is primary designed for computer control. Our build-in interface takes over all functions for our standard potentiostats. All high voltage instruments are supplied with a faraday cage for shielding and safety. The cage is equipped with door switches, which disable the compliance voltage output when the door is opened. Furthermore we installed an additional circuit, which switches off the compliance voltage, when in each range the current exceeds the maximum around 15 %.

The measurement of the current is performed with a difference amplifier (resistor to GND, reference electrode with working sense line). The current of the PGU 400 V can be switched in 8 steps from 1000 mA to 100 nA.

The potentiostat has instruments for current (in % proportional to the selected current range), the cell-potential and the compliance voltage. It has switches to set the current range and the mode OCP and closed circuit in manual use. For polarisation there are two build-in potentiometers and two BNC-connectors to set potential internal and/or from an external source. This is especially helpful for easy experiments in manual mode. For the automatic mode operation please have a look at the features of our software **EcmWin**.

The IR-Drop Compensation works with the positive feedback method.

## Technical Details

Supply voltage	115/230 V, 47 – 53 Hz, max. 3 A, IEC connector
Modes	Potentiostat and Galvanostat
Impedance analyzer	None
Electrode connections	2, 3, 4 Electrodes (CE, RE, WE, WE-Sense)
Floating mode	None
Compliance voltage	±420 V
Maximum current	±1000 mA
Polarization ranges	±400 V Potentiostat ±1000 mA Galvanostat.
Current ranges	8 steps from 1000 mA to 100 nA
Resolution	100 nA=10000 mV, in 100 nA range 10 pA=1 mV
Electrometer input impedance RE	10 <sup>11</sup> Ω
Bandwidth	1 kHz
ADC	24 bit, max. resolution 1 μV
DAC	26 bit at ±10 V → 330 nV steps
Resolution of setvalue	< ±10 mV, ±0,01 %
Resolution of measurement	< ±10 mV, ±0,01 %
Sample rate	Standard 200 Hz at 24 bit, 1 kHz at 16 bit
Interface	Ethernet
Software	EcmWin, EcmView
Measurement	OCP, hold experiments, reversed scan cyclic voltammetry, chronoamperometry, sequence measurement with battery charging and discharging functions, measurement current density versus time, current density versus potential
Additional inputs	2 BNC connectors for external scanner
Additional outputs	4 BNC for connection of instruments, output: potential, current, current with 10Hz filter, current with x 10 amplifier current as ±10 V voltage