PGU-100/200V

IPS
Elektroniklabor GmbH & Co. KG

Overview

Potentiostat, Galvanostat

- Higher polarisation voltage
- 8 current ranges from 2000 mA down to 100 µA
- Compliance voltage ±120 V/±220 V

Description

The **PGU 100 V** and the **PGU 200 V** are our high voltage potentiostats/galvanostats. For some applications customers need a higher compliance voltage and sometimes also a higher polarisation voltage. For this purpose, we designed the **PGU 100 V** with a compliance voltage of ±120 V and a polarisation voltage of ±100 V and the **PGU 200 V** with a compliance voltage of ±220 V and a polarisation voltage of ±200 V. The maximum current range is always 2 A. With the higher voltage range up to ±220 V and polarisation voltage up to ±200 V (if the cell conditions allow this) and output current 2000 mA (4000 mA) these **PGUs** are designed for special jobs in coating research and development (nano tubes and anodizing).

These potentiostats 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 PGU100 V and PGU200 V can be switched in 8 steps from 2000 mA to 1 µA.
The potentiostats have 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 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	Optional
Electrode connections	2, 3, 4 Electrodes (CE, RE, WE, WE-Sense)
Floating mode	Yes, switchable
Compliance voltage	±130 V/±220 V
Maximum current	±2000 mA (±4000 mA on request)
Polarization ranges	±100 V ±200 V Potentiostat ±2000 mA Galvanostat.
Current ranges	8 steps from 2000 mA to 1 µA
Resolution	1 µA=10000 mV, in 1 µA range 100 pA=1 mV
Electrometer input impedance RE	$10^{11}\,\Omega$
Bandwidth	10 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 10 Hz filter, current with x 10 amplifier current as ±10 V voltage