

Datasheet PGU 100-PCR

The potentiostat / galvanostat PGU 100-PCR can be used as a normal potentiostat / galvanostat and for the measurement of the electrochemical noise. In standard applications this device is characterized especially by the high input impedance of the reference electrode. The device has current ranges from 100mA to 100pA. Because the current proportional output signal has a maximum value of $\pm 10V$, this means a (theoretical) resolution of the current measurement in the lowest range of $0,01pA = 1mV$.

The device is in its basic design a potentiostat / galvanostat with a high input impedance. The features of the measurement of the electrochemical noise are given to him by two additional slots, which are equipped with filters and amplifiers.

The first slot (U-noise-filter) is for the potential noise. It has a switchable amplifier with the factors x100, x500, x1000, x2000, x5000 and x10000. Furthermore it has a switchable Besselfilter with an upper limiting frequency of 1, 10, 40, 100, 200 and 500Hz. The lower limiting frequency is fixed set to 0,1Hz (by request also 0,01Hz). The noise potential can either be measured directly with the help of two electrodes via an input jack. But it can also be a "quite normal" standard measuring cell connected to the potentiostat. On the filter slot is a toggle switch that can be switched from external to internal. Thus, the noise potential is gripped directly from the potential output of the potentiostat (this is probably the easier option).

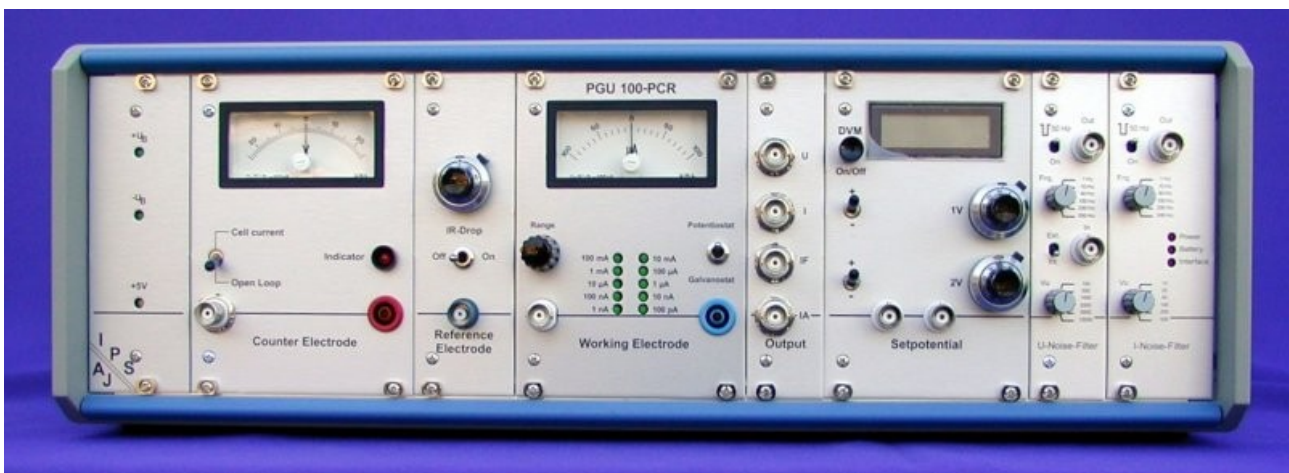
The second slot (I-noise-filter) is for the current noise. It has a switchable amplifier with the factors x10, x20, x50, x100, x200 und x500. Besides it has a switchable Besselfilter with an upper limiting frequency of 1, 10, 40, 100, 200 and 500Hz. The lower limiting frequency is fixed set to 0,1Hz (by request also 0,01Hz). The noise signal is gripped internally by the output of the ammeter. Thus, for the measurement of current noise a measuring cell with counter-, reference- and working electrode will be connected to the potentiostat.

Both slots are yet equipped with a connectable blocking filter for the 50Hz mains frequency.

The device works either in mains or in battery operation.

In short phrases:

Max. $\pm 12V$ / $\pm 100mA$, 10 current ranges to 100pA, resolution 0,01pA (theoretical). Instruments for U and I, nominal voltage generator internal and 2 nominal voltage inputs. Control inputs for computer interface, autoranging in connection with EcmWin.



Electrical data PGU 100-PCR

Design:	
• Instrument for potential measurement	digital, 3½-digits, ±1999mV
• Instrument output voltage	analog display for the modulation voltage and as an indicator for the OCP = internal nominal voltage
• Counter electrode measuring electrode	
• Instrument for current measurement	analog, 0 - ±100%, proportional to the selected I-range
• Nominal voltage potentiostat	2 inputs for external voltage, 2 nominal voltage generators internal
• Nominal voltage galvanostat	see nominal voltage potentiostat
• Current range	manually, 10 ranges
• Working mode potentiostat / galvanostat	manually and automatic via external switch
• OCP / closed circuit	manually and automatic via external switch
• Recommend frequency range	0 to 2kHz (depending on the selected current range)
• IR-drop compensation	yes
Size: (WxHxD)	

Polarization range	
• V-nominal for potential	±1000mV and ±2000mV
• V-nominal for I-constant	±1000mV
Nominal voltage external	
• V-input	±10V, 2 BNC input connectors, work adding
• I-input	±1V for maximum modulation, 2 BNC input connectors, work adding
Outputs	
• V-output	±10V
• I-output	±100mA max. as proportional voltage signal ±10V
In- / output resistance	
Internal resistance of current measurement	approximately $10^{-4}\Omega$
Input resistance of reference electrode	approximately $10^{15}\Omega$
Input resistance for external nominal voltage	10k Ω (V- and I-input)
Rise speed / rise time	2000V/sec. = 100 μ s/V
Current measurement	
Analog	
• Current range	100mA to 100pA
• Accuracy	0,3%, in the ranges 100nA / 10nA / 1nA = 1% in the range 100pA = 5%
• I-output	10 ranges, 10000mV
Voltage measurement	
Analog	
• V-output	±10V, 0,1%
• Digital voltage meter	3½-digits, to ±1999mV, 0,25%
V-counter electrode-measuring electrode	±11V
Zero point stability:	
• At main power fluctuation of 10%	approximately 50 μ V
Ripple-noise	approximately 20 μ V (50Hz)
Drift	approximately 100 μ V/day; approximately 10 μ V/°C
Phase shift	n.a.
Log. output	no
Autoranging	yes (in connection with a measuring setup)