

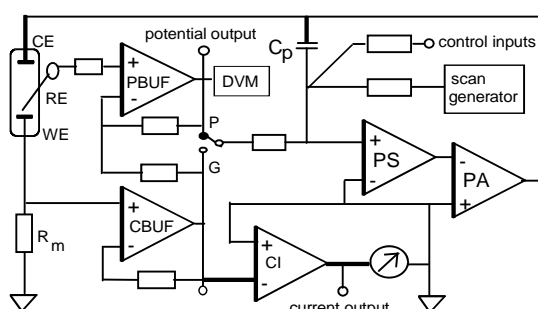
POTENTIO-GALVANO-SCAN PGS 95

The economic solution for a compact electrochemical testing equipment

This combination of a rugged medium power 25 V / 2 A - potentiostat / galvanostat and a high - accuracy scanner represents an economically priced solution for a wide variety of electrochemical tests, preponderantly applied in electrochemical corrosion research and voltammetry. The analogue scanner produces infinite smooth ramps or triangles starting at any initial potential (or current), running to a final potential (or current), and stops or returns. The mode of scan return (current or potential limit) is independent from the potentiostatic or galvanostatic mode, respectively. The scan rates range from 5 mV / h to 10 V / s. The scan potential or current settings can be varied within ± 10 volts (or ± 2 A, respectively). Operating modes, either potential or current control, can be changed over by simple switching without variation of external cell connections. Low impedance outputs, buffer converted and referred to ground are provided for connection of recorders or A/D - converters. A superimposing control input allows additional external control, a special input is provided for IR - drop compensation. Optionally, range settings, operation modes and scan functions can be controlled by a personal computer: using the control interface PC-G and a A/D - D/A multifunction board for the personal computer. A software package (CPC) is available for a variety of electrochemical measurements and the interpretation of results.



- Potentiostat / Galvanostat 25 V / 2 A
- Built - in Scan Generator
- Manual or Computer - Control



The potential difference between reference electrode RE and working electrode WE is picked up by the buffer PBUF. A voltage drop proportional to the cell current across the ranging resistor R_m is converted by the current buffer CBUF. Either potential E or current I control of the cell can be selected by the control switch. All controls are fed to the inverting input of the high gain voltage amplifier PS, kept at virtual ground voltage. The output of PS is power - amplified by PA, providing the cell current via the counter electrode CE, either needed for potential control or kept reciprocally proportional to the ranging resistor R. The scanner provides the sweep, external controls can be superimposed at the control inputs. The output of CBUF is inverted by CI, to receive a current signal for feed - forward control proportional to the current (IR - drop compensation). PBUF and CBUF are fast and accurate, so the output voltages are coincident with the existing cell potential and current. The PGS 95

model is equipped with a power - MOS output stage providing a faster rise and an automatic current limitation slightly beyond the maximum current of ± 2 A, safeguarding the output from short circuits and operating errors.

SPECIFICATIONS PGS 95

AC - power 115 / 230 V, 50 to 60 Hz, 100 W
stabilisation range + 10% and -15% of nominal line voltage

Potential/Current -Buffer (PC, CC)

Input impedance $> 10^{12} \Omega$, 5 pF in parallel
Input range $\pm 10 V$
Input bias current less than $10^{-11} A$ at 25 °C ambient temperature
Bandwidth (-3dB) 2 MHz Pot.Control, 200 kHz Current Control
Small signal rise time $< 3 * 10^{-7} s$ Pot. Control, $3 * 10^{-6}$ Curr. Control
Slew rate 5 V / μs
Potential output / Current output single - ended, ground - referred, 1 k Ω output resistance
Drift 200 μV / 10 h, 500 μV / 100h, 10 μV / °C

Potentiostat (VA, PA)

Control input resistance 100 k Ω
Superimposing accuracy 0,1% both inputs
Control input range $\pm 10V$
Open loop gain typically 1 M at d. c. (1 V / μV)
Roll - off 20 dB / decade of frequency
Unity gain crossover 200 kHz approx.
Small signal rise time less than 2 μs (closed loop, resistive load, 90%)
Slew rate 5 V / μs , 1 A / μs
Full power output up to 25 kHz
Noise referred to control input 30 μV rms, ripple negligible
Drift referred to control inputs 200 μV / 10 h, 500 μV / 100 h, 10 μV / °C
Operating limits $\pm 30 V$ or $\pm 2,2 A$ max., $\pm 25 V$ at $\pm 2,0 A$
Output power max. 50 Watts

Meter and recorder output circuit

Meter indication 3 3/4 digit autoranging meter for potential, analogue meter for current
Current ranges (full scale deflection) 2A to 20 μA in 6 decadic ranges
Current output converter 2 V corresponding to full range, 0.2 % tolerance rising to 0.5 % in high ranges
Potential output converter unity converting rate ± 0.2 % within the full range of $\pm 2 V$

Scan Generator

Mode of operation constant potential (resp. current), or ramp, or triangle
Scanning rate 6 coarse positions for the slope 0.01, 0.1, 1, 10, 100, 1000 mV/s
with overlapping fine adjustment, calibration, accuracy 2 %, attenuation 10
Potentials settings Separately selectable in polarity and scan width, 1000 divisions of the dial correspond to 1000 mV $\pm 0,2$ % in "Multiplier", position "1"
Output multiplier multiplies potential and scanning rate with scale factor 0.5, 1, 2, 5, 10 $\pm 0,2$ %
Long term stability (output voltage) ± 1 mV multiplied with "Multiplier" factor output voltage
Signal - to - noise ratio > 80 dB

Option PC-G

Control interface for PGS 95, controlling current ranges, counter electrode mode (rest potential / potentiostatic operation) and potentiostatic / galvanostatic operation as well as scan start / stop functions. The interface has TTL-quasi-compatible (5 V) inputs and outputs, and provides the analogue output signals for current and potential together with the control signals on a Centronics 36 pin terminal at the rear panel. It fits best to our software modules (see separate leaflet)

Input lines 3 x range, BCD - coded, CE on/off, scan start, scan stop, ramp/triangle, pot/galv - mode
counter electrode on/off and ranges are displayed on a LED-array
ranges are switched by precision reed-relays, life $> 1000,000$ actuations

Dimensions

Front panel 483 x 133mm, housing 540 x 155 x 382 mm, weight net 12 kg

<http://www.bank-ic.de>