µStat 100

µStat 100 is a small portable potentiostat that can be applied for amperometric measurements at a fixed dc-potential as well as voltammetric measurements like differential pulse and square wave voltammetry. The supplied software for Windows is used to control the instrument and to plot the measurements and perform the analysis of results. The instrument is controlled and powered by means of a USB connection.

µStat 100 has six current ranges: 1 nA to 100 µA, with a resolution of 1 pA on the lowest current range. The instrument automatically selects the optimal current range.

The instrument can be tailored for specific applications. All relevant amperometric and voltammetric methods can be programmed for the instrument.

The embedded software of ***µStat 100*** can provide all methods which are relevant for electrochemical sensors. The voltammetric methods are used to measure a curve of current versus potential. Amperometric detection is used to record current as a function of time.

Available Voltammetric methods

- Linear sweep voltammetry (**LSV**)
- Cyclic voltammetry (**CV**)
- Square wave voltammetry (**SWV**)
- Differential pulse voltammetry (**DPV**)

These methods can all be used in their stripping modes which are applied for (ultra-) trace analysis.

Available amperometric method

- Amperometric detection (**AD**)

Specifications of most of the relevant parameters

General pretreatment		General voltammetric parameters	
Apply conditioning potential for:	0-1600 s	Begin potential:	-2.000 V to +2.000 V
Apply deposition potential for:	0-1600 s	End potential:	-2.000 V to +2.000 V
Apply begin potential for:	0-1600 s	Step potential:	1 mV to 250 mV
Conditioning potential:	-2.000 V to +2.000 V	Pulse potential	1 mV to 250 mV
Deposition potential:	-2.000 V to +2.000 V		
Standby potential:	-2.000 V to +2.000 V		

Limits of some technique specific parameters

LSV and CV	Scan rate:	0.2 mV/s (1 mV step) to 5.0 V/s (50 mV step)
SWV	Frequency:	1 Hz to 100 Hz
DPV	Scan rate: Pulse time:	2 mV/s to 2.5 V/s 1 ms to 300 ms
AD	Interval time: Run time:	50 ms to 300 s 0.2 s to hours

Specifications

- dc-potential range	± 2.000 V
- compliance voltage	± 5.0 V
- dc-potential resolution	1 mV
- dc-offset error	2 mV
- accuracy	≤ 0.2 %
- current ranges	1 nA to 100 µA (6 ranges)
- maximum output current	± 10 mA
- current resolution	0.1 % of current range 1 pA on lowest current range
- accuracy	≤ 0.2 % of current range at 100 nA and 1 µA ≤ 0.5 % at 10 nA ≤ 1.0 % at 1 nA all with additional 0.2 % offset error
- electrometer amplifier input	> 100 Gohm // 4 pF
- rise time	approx. 50 µs
- dimensions	6.0 cm x 4.2 cm x 2.8 cm (L x W x H)
- power	5 V / 60 mA from USB connector
- interfacing	USB
- external I/O options	analog: 1 input and 1 output channel (0 V - 4.096 V) digital: 4 input and/or output lines
- sensor connection	specific connector

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