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TECHNOLOGIES

MicruX® ECStat

Bipotentiostat / Galvanostat / ZRA / EIS Analyzer

MicruX® ECStat

MicruX ECStat *(ref. ECSTAT2020)* is a USB-powered All-in-One Electrochemical Workstation, including a Bipotentiostat / Galvonostat with built-in Impedance Analyzer, in a very compact and portable equipment.

» **Dimensions:** 160 x 100 x 45 mm *(L x W x H).*

» **USB**-powered

» Control PC software **- MicruX EC Manager**

» **Interfacing:** USB-C

» **LED indicators:** power on, cell on

» **Built-in FRA/EIS analyzer** from 10 µHz to 1 MHz

» **Current ranges:** 100 pA to 10 mA (max. current: ± 30 mA)

» **Operating modes:** bipotentiostat, potentiostat, ZRA, galvanostat, PEIS analyzer

» MicruX® ECStat – Available Techniques

ECStat includes more than 25 electroanalytical techniques for voltammetric, amperometric, potentiometric and impedance spectroscopy analysis.

Voltammetry	
CV	Cyclic Voltammetry
FSCV	Fast-Scan Cyclic Voltammetry
LSV	Linear Sweep Voltammetry
DPV	Differential Pulse Voltammetry
NPV	Normal Pulse Voltammetry
SWV	Square Wave Voltammetry
ACV	Alternating Current Voltammetry

Amperometry	
AD	Single-Potential DC Amperometry
ZRA	Zero Resistance Amperometry
FA	Fast Amperometry
PAD	Pulsed Amperometric Detection
DPA	Differential Pulse Amperometry
MSA	Multi-Step Amperometry

Potentiometry	
ZCP	Zero Current Potentiometry
PD	Potentiometric Detection
MSP	Multi-Step Potentiometry
PSA	Potentiometric Stripping Analysis

Impedance (Potentiostatic Mode)	
PFP	PEIS – Fixed Potential
PSP	PEIS – Scan Potential
PTS	PEIS – Time Scan

Bipotentiostat
CV-CV* / CV-AD*
LSV-LSV* / LSV-AD*
AD-AD*
MSA-MSA* / MSA-AD*

**WE2 potential is fixed or offset from WE1 potential*

Note: voltammetric techniques can be used for stripping voltammetry in combination of a pretreatment procedure.

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» MicruX® ECStat - Measurement Specifications

General Pretreatment		
Conditioning time	0 – 1500 s	
Deposition time	0 – 1500 s	
Equilibration time	0 – 1500 s	
General Parameters		
Start, Stop, Vertex potential	-10 V to +10 V	
Step potential	0.0075 mV to 250 mV	
Pulse potential	0.0075 mV to 250 mV	
Specific Parameters		
CV, LSV	Scan rate:	0.01 mV/s to 500 V/s
DPV, NPV	Scan rate:	0.02 mV/s to 25 V/s
	Pulse time:	1 ms to 300 ms
SWV, ACV	Frequency:	1 Hz to 2000 Hz
AD, PD, ZRA, ZCP	Interval time:	0.25 ms to 300 s
	Maximum run time:	1 000 000 s (several days)
FA	Interval time:	0.02 ms to 1 s
	Maximum run time:	30 s
DPA	Interval time:	50 ms to 10 s
	Pulse time:	1 ms to 1 s
	Maximum run time:	640 000 s (several days)
PAD	Pulse time:	100 ms to 2 s
	Run time:	2 s to 1 000 000 s
MSA, MSP	Interval time:	0.4 ms to 300 s
	Number of steps:	1 to 255
	Number of cycles:	1 to 20000
	Maximum run time:	1 000 000 s (several days)
PSA	Potential limit:	± 10 V
	Run time:	1 s to 1 000 000 s
BIPOT Mode	Potential limit:	± 5 V

Note: Specifications subject to change without prior notice

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» MicruX® ECStat features

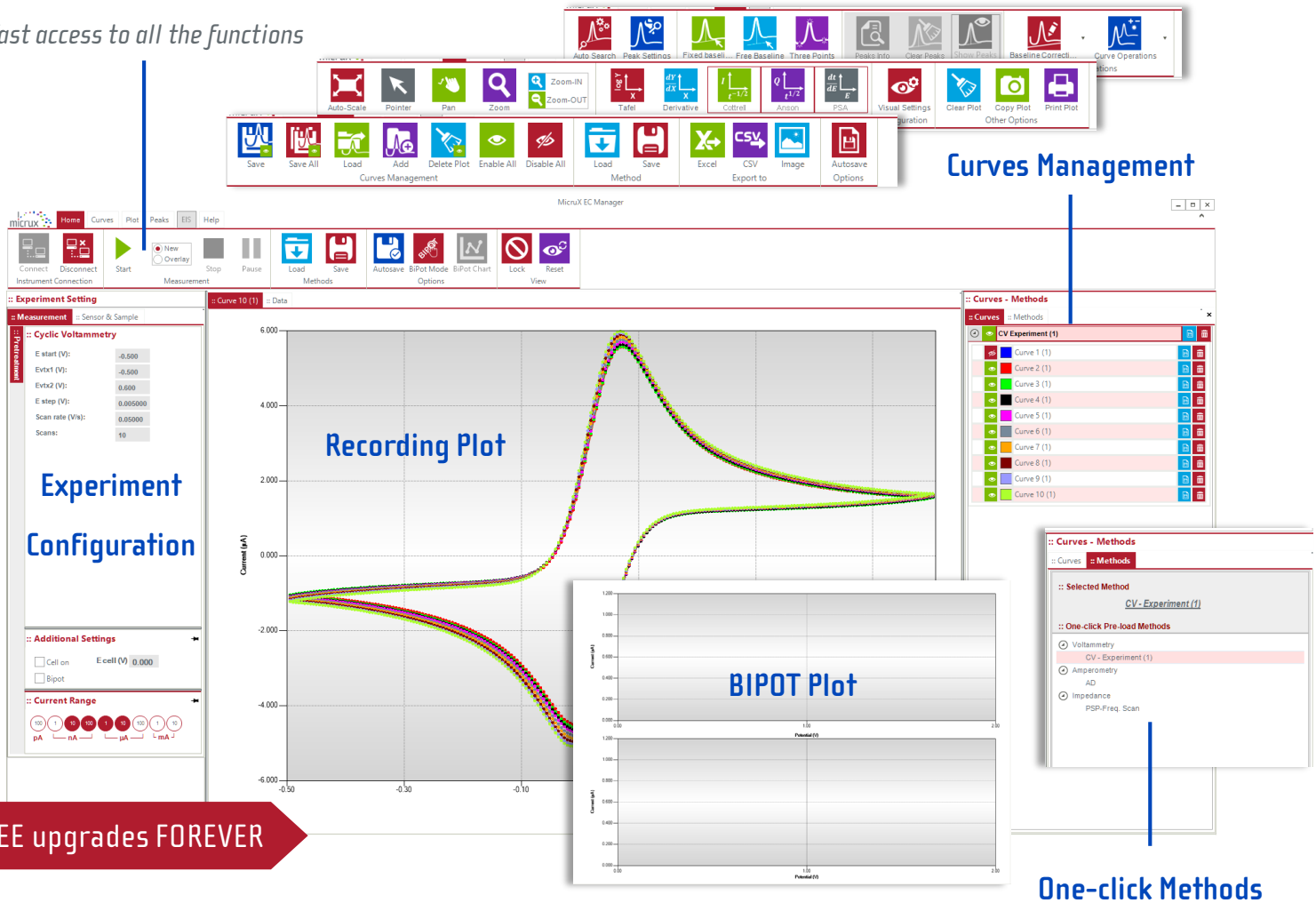
General	
» DC-potential range	± 10 V
» Compliance voltage	± 10 V
» Maximum current	± 30 mA
Potentiostat	
» Applied DC-potential resolution	75 µV
» Applied potential accuracy	≤ 0.1% ± 1 mV offset
» Current ranges	100 pA to 10 mA (9 ranges)
» Current accuracy	≤ 0.1 % (at Full Scale Range)
» Measured current resolution	0.006 % of current range (5 fA on 100 pA range)
Galvanostat	
» Current ranges	1 nA to 10 mA (8 ranges)
» Applied DC-current range	± 6 times applied current range
» Applied DC-current resolution	0.005 % of applied current range
» Measured DC-potential accuracy	75 µV at ± 10 V 7.5 µV at ± 1 V 0.75 µV at ± 0.1 V
EIS (impedance measurements)	
» Frequency range	10 µHz to 1 MHz
» AC-amplitude range	1 mV to 250 mV rms, or 0.6 V p-p
Electrometer	
» Electrometer amplifier input	> 1 TΩ // 10 pF
» Bandwidth	1 MHz
Other	
» External inputs/outputs (D-Sub 15)	Iout, Eout 1 Analog input (± 10V, 18 bit) 1 Analog output (0-10 V, 12 bit, 1 kOhm output impedance) 4 Digital outputs (5 V) 1 Digital input (5 V)
» Housing	Aluminium case: 160 x 100 x 45 mm^3
» Weight	0,5 Kg
» Temperature range	0 °C to + 50 °C
» Power supply	USB power supply
» Communication	USB-C

MicruX® EC Manager

MicruX® EC Manager is a modern graphical user interface for the control of the instrument from a PC, enabling real-time plotting, storage and analysis of the results.

Graphical Ribbon Bar Menu

Fast access to all the functions



FREE upgrades FOREVER

» Multiple curve options: Save, Load, Export to Excel/CSV/Image

» Peaks search, baseline corrections, curve operations

» Multiple EIS spectrum plotting

» Export EIS data for analysis

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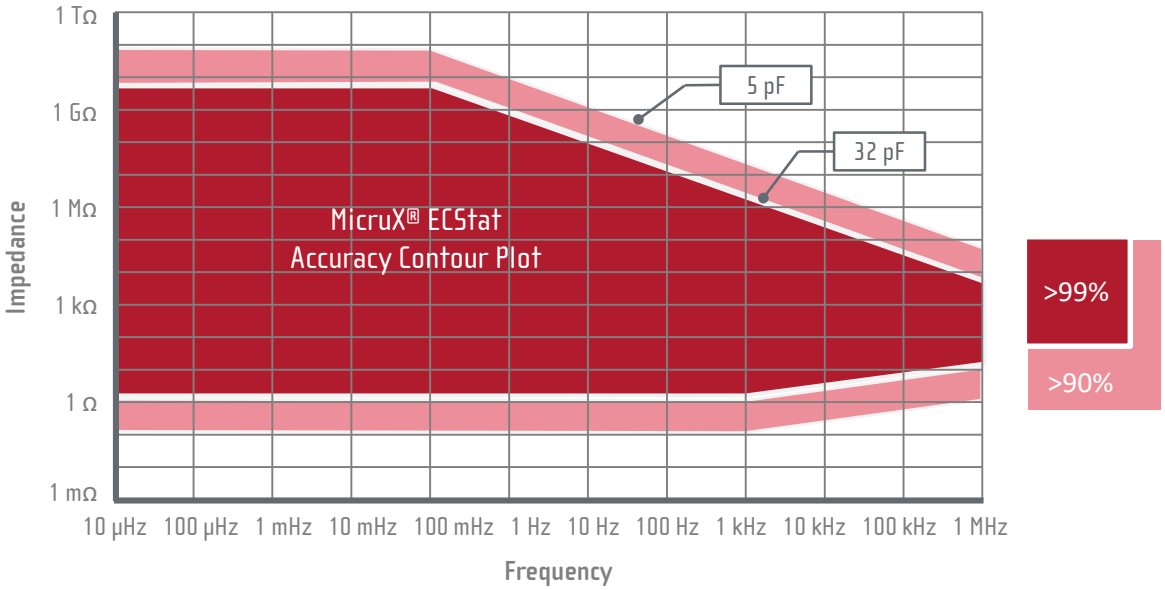
» EIS Contour Accuracy Plot



Note: *The accuracy contour plot is determined under lab conditions and should be just used for reference purposes. Please note that the true limits of an impedance measurement are affected by all components in the experimental set-up, such as cables, the environment, and the cell.*

» MicruX® ECStat - Standard Pack

Basic content:

- » Bipotenciostat/Galvanostat/Impedance Analyzer
- » Plastic briefcase
- » Sensor cable with 2 mm banana plugs (+ Alligator clips)
- » USB-C cable
- » Y-USB cable (for BIPOT extra power)
- » Dummy cell
- » MicruX® EC Manager software

Additional accessories:

- » Sensor cable with miniUSB plug for MicruX platforms
- » Electrode Pack

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