



DY2000 Series Multichannel Potentiostat

A new portable, high-performance, and low-cost scientific instrument for sub-picoampere to mA current measurements

Hardware

- Input Channels: 1 or 2 (depending on the selected model)
- Electrode Configurations: 1 CH: (CE, RE, WE), or 2 CH: (CE1, CE2, RE, WE1, WE2)
- Current Range: $\pm 2\text{nA}$ to $\pm 2\text{mA}$ in 7 steps
- Current Resolution: 0.002% of full scale, with highest resolution at 76 fA
- Current Accuracy: $< \pm 0.5\%$ of full scale ($\pm 1.0\%$ for $\pm 2\text{nA}$ and $\pm 20\text{nA}$)
- Input Impedance of electrometer: $> 10^{12} \Omega$
- Potential Range: $\pm 2.0\text{ V}$ (16-bit DAC)
- Potential Bandwidth: $> 30\text{ kHz}$
- Compliance Voltage: $> \pm 2.2\text{ V}$
- Bias Potential: $\pm 2.0\text{ V}$ (for multi-channel systems), 16-bit DAC
- I/E Low Pass Filter: 4 ranges (Auto or Manual), depending on sensitivity setting
- Signal Low Pass Filter: 4 ranges (None, 100Hz, 10Hz, 1Hz), selected by Auto or Manual
- Input Bias Current: $< 20\text{ pA}@ 25^\circ\text{C}$
- ADC Sampling Rate: 0.1Hz-10kHz, 0.002% resolution, 15000 data / CH
- External Port: CH-1 current output (0-5V) and external digital trigger input
- Dimensions & Weight: 14.5 x 24 x 4.5 cm, 1 kg
- Power Requirements: 90-240 VAC, 3W

Software

- **Easy-to-use** user interface for experimental setup, graphic display, data analysis and output file management
- Data Processing (Filter, Smoothing, Remove DC Offset, Math, Plot Segments, FFT, etc.)
- Electrodes On/Off control, internal dummy cell for self testing
- Display style selection: Current (Cathodic Positive or Anodic Positive), Potential (Positive Left or Positive Right) Auto, Chart and Graph
- Automatic peak potential, current reporting and charge calculation
- Current alarm (user selected current limits)
- Automate **sequential** experimental runs, each with different techniques and parameters
- USB connection, requires a user-provided PC running *Windows*.

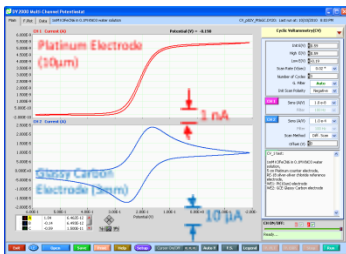
Experimental techniques

- (1) Amperometric i-t curve (iT): Sampling Rate (Hz) = [0.01 to 10K]
- (2) Cyclic Voltammetry (CV): Scan Rate (V/sec) = [0.001 to 10]
- (3) Linear Sweep Voltammetry (LSV): Scan Rate (V/sec) = [0.001 to 10]
- (4) Open circuit potential vs. time (OCP): Sampling Time (sec) = [0.0001 to 10]
- (5) Differential Pulse Voltammetry (DPV): Step E (V) = [0.001 to 0.1], Amplitude (V) = [0.001 to 0.5], Pulse Period (sec) = [0.02 to 100]
- (6) Normal Pulse Voltammetry (NPV): Step E (V) = [0.001 to 0.5], Pulse Period (sec) = [0.02 to 100]
- (7) Multi-Step Potential (MSP): Step E (V) = [-2.0, +2.0], Step Width (sec) = [0.005 to 200], Max. Step ≤ 8
- (8) Square Wave Voltammetry (SWV): Step E (V) = [0.001 to 0.1], Frequency (Hz) = [0.01 to 50]
- (9) Anodic (Cathodic) Stripping Voltammetry

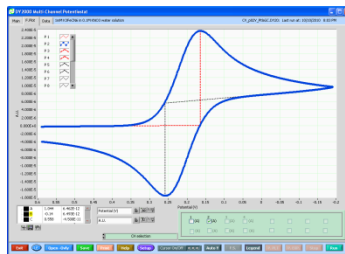
DY2000 Series Models

Function \ Model Number	DY2011	DY2021	DY2013	DY2023
Input Channel No.	1	2	1	2
Electrode Configurations	CE, RE, WE	(CE1, RE1, WE1), (CE2, WE2)	CE, RE, WE	(CE1, RE1, WE1), (CE2, WE2)
Amperometric <i>i</i> -t (<i>i</i> T)	✓	✓	✓	✓
Cyclic Voltammetry (CV)	✓	✓	✓	✓
Linear Sweep Voltammetry (LSV)	✓	✓	✓	✓
Open Circuit Potential vs. Tim (OCP)	✓	✓	✓	✓
Differential Pulse Voltammetry (DPV)			✓	✓
Normal Pulse Voltammetry (NPV)			✓	✓
Multi-Step Potential (MSP)			✓	✓
Square Wave Voltammetry (SWV)			✓	✓

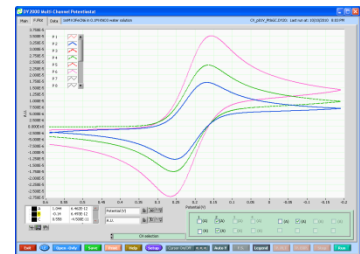
Sample Data



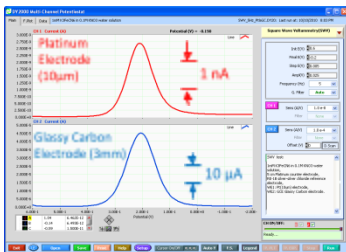
(1) Dual channel CV scan with Pt & GC electrodes



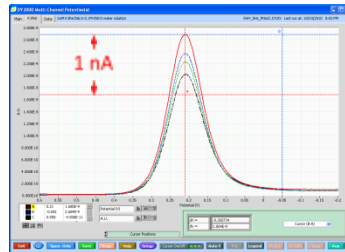
(2) Auto peak parameters calculation (Diffusive, Gaussian, and Sigmoidal)



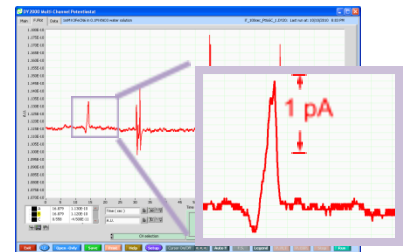
(3) Data overlay (CV)



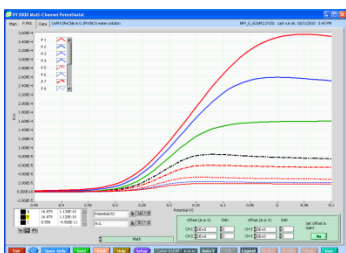
(4) Dual channel SWV scan with Pt & GC electrodes



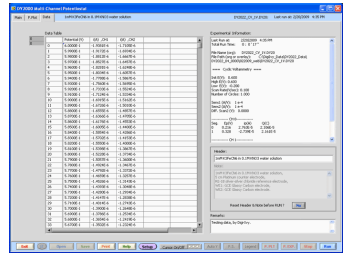
(5) Plot overlay (SWV), and auto cursor's position calculations



(6) Amperometric *i*-t (*i*T), Pt electrode, Sens = 1e-9 (A/V)



(7) Data overlay (NPV)



(8) Raw data and calculated parameters Display



(9) Instrument photos:
Top: Front panel (1 channel)
Middle: Front panel (2 channels)