




Physical Electrochemistry

Sensors | Nanotechnology | Fundamental Research

the XM difference

-  **Market leading impedance analysis**
-  **Widest voltage and current range available**
-  **Built-in Linear Scan Generator and fast acquisition**



The latest generation ModuLab[®] XM ECS system is designed with modularity and flexibility very much in mind, to satisfy a wide range of applications. Purpose built for energy research the ModuLab XM provides:

- High-performance impedance analysis throughout the entire frequency range and across all three modes of operation
 - Swept sine (highest accuracy and repeatability)
 - Multi-sine/FFT (for increased test throughput especially at low frequency)
 - Harmonic analysis (to study cell non-linearity)
- Unique optional 100 V compliance and polarization module for ALL test types (cyclic voltammetry, fast pulse, impedance and AC voltammetry) enables potentiostatic and galvanostatic tests on very low conductivity cells.
- Multi-component system calibration for ensured measurement accuracy
- Market leading frequency range and resolution (1 in 65,000,000)
- smooth 'analog' waveforms are available in all potentiostatic and galvanostatic scan modes including - cyclic voltammetry, linear scan voltammetry, and linear scan potentiometry
- 1 M Sample per second data acquisition rate allows measurement of ultra-fast pulse waveforms and fast cyclic voltammetry
- Wide current measurement range (over 16 decades from 0.15 fA to 2 A) allows testing of the most demanding low conductivity cells
- Wide range of waveforms including Fast-CV, DPV, NPV, SWV, linear sweep voltammetry, potentiometry, chronoamperometry
- User friendly software with simple three step test setup/run, built-in live waveform displays, connection diagrams and equivalent circuit functions
- Plug and Play option modules and additional channels to minimize system down time

Accessories

Flat Cell

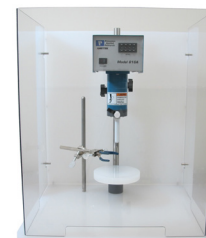
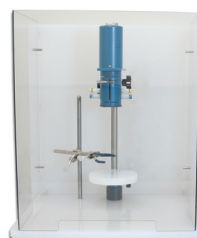
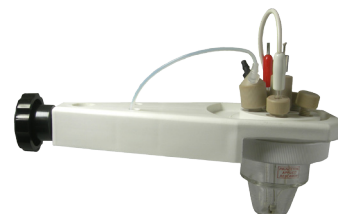
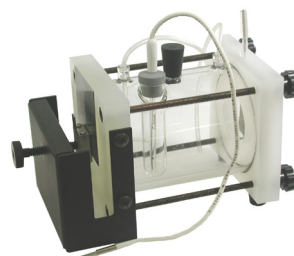
The practical design of the Flat Cell makes it simple to use for physical electrochemistry research. It can accommodate a wide range of electrode sizes, eliminating the need for machining or special mechanical procedures.

Micro-Cell

The Micro-Cell Kit comes as a complete kit to which you need only add the working electrode and electrolyte of your choice. A Pt Wire Counter Electrode and Ag/AgCl Reference Electrode are included in addition to a Purge Tube Assembly that allows for purging of either the bulk solution or providing a blanket purge over the solution during the experiment to prevent atmospheric gases from dissolving back into solution.

Rotator Accessories

Items for our Models 616A and 636A Rotating Disk Electrodes (RDE) and Rotating Ring-Disk Electrodes (RRDE) may be found here. RDE and RRDE tips (electrodes) and arbors along with specialty tools. Also included is a Rotating Cylinder Electrode assembly for customer made cylinders.



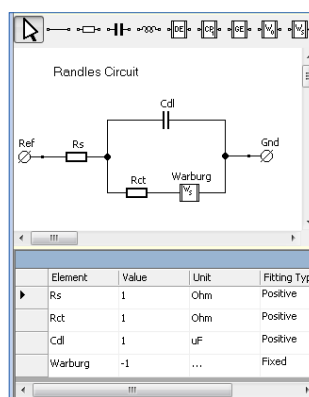
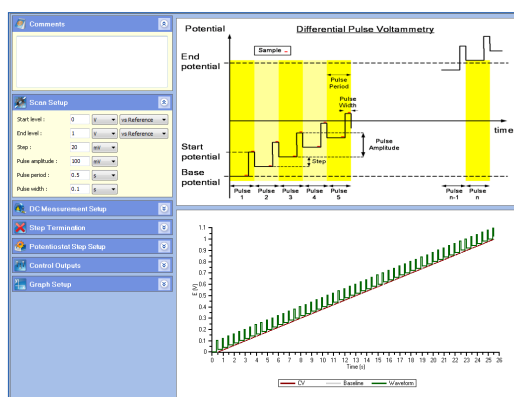
Software

ModuLab XM ECS software is a very flexible and comprehensive electrochemical test software package. A large selection of test types are provided, from standard open circuit and cyclic voltammetry to complete multi-step sequences. This can include sample preparation, potentiostatic/galvanostatic, ramp and pulse techniques, and integrated impedance analysis.

As test parameters are entered into the software, a waveform diagram displays the timing and levels that will be applied to the cell when the test is run.

Equivalent circuit models may be constructed using a range of components including resistors, capacitors, inductors, distributed elements, constant phase elements, Gerischer elements, and Warburg open / short elements.

A built-in report generator takes test results and outputs them, together with graphs, diagrams and analysis information into your selected word processor software.



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