CS150 Potentiostat/Galvanostat contains a fast digital function generator, high-speed data acquisition circuitry, a potentiostat and a galvanostat. With high performance in stability and accuracy with advanced hardware and well-functioned software, it is a most cost-effective and basic model for you. With basic methods such as potentiostatic (I-T), CV, LSV, Potentiodynamic (Tafel plot), galvanostaic charge and discharge(GCD), it's suitable for various applications such as corrosion measurement, the carbon dioxide reduction, the electro-catalysis, battery charge and discharge tests, etc.

Applications

- Reaction mechanism of Electrosynthesis, electrodeposition (electroplating), anodic oxidation
- Electrochemical analysis and sensor;
- Corrosion study of metals in water, concrete and soil etc; Fast evaluation of corrosion inhibitor, water stabilizer, coating and cathodic protection efficiency.
- New energy materials (Li-ion battery, solar cell, fuel cell, supercapacitors), advanced functional materials, photoelectronic materials
- Electrocatalysis field, OER, HER ORR etc

Standard supply list -Model CS150 potentiostat

Instrument host CS150 x1
CS studio software x1
Power cable x1
USB cable x1
Cell cable x2
Dummy cell(1kΩ||100μF) x1
Manual x1

Service (the after-sale service is totally free)

1. Warranty period: 5 years
2. Provide manual, software installation video, and training videos.
3. Provide repair service for free

4. Lifetime free software upgrading and technical service

Software /Techniques of model CS150 potentiostat

Stable polarization
- Open Circuit Potential (OCP)
- Potentiostatic (I-T curve)
- Galvanostatic
- Potentiodynamic (Tafel plot)
- Galvanodynamic (DGP)
- Sweep-Step Functions (SSF)

Transient Polarization
- Multi Potential Steps
- Multi Current Steps
- Potential Stair-Step (VSTEP)
- Galvanic Stair-Step (ISTEP)

Chrono Method
- Chronopotentiometry (CP)
- Chronoamperametry (CA)
- Chronocaulometry (CC)

Voltammetry
- Linear Sweep Voltammetry (LSV)
- Cylic Voltammetry (CV)

Corrosion measurements
- Cyclic polarization curve (CPP)
- Linear polarization curve (LPR)
- Electrochemical Potentiokinetic Reactivation (EPR)
- Electrochemical Noise (EN)
- Zero resistance Ammeter (ZRA)

Charging/ Discharging
- Battery Charge and Discharge
- Galvanostatic Charge and Discharge (GCD)
- Potentiostatic Charging and Discharging
- Potentiostatic Intermittent Titration Technique
- Galvanostatic Intermittent Titration Technique

Misc. Techniques
- Data Logger
- Electrochemical Stripping/ Deposition
- Bulk Eletrolysis with Coulometry (BE)
- Rs Measurement

Specifications

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Support 2-, 3- or 4-electrode system	Potential and current range: Automatic
Potential control range: ±10V	Current control range: ±2A
Potential control accuracy: 0.1%×full range±1mV	Current control accuracy: 0.1%×full range
Potential resolution: 10μV (>100Hz),3μV (<10Hz)	Current sensitivity:1pA
Rise time: <1μs (<10mA), <10μs (<2A)	Reference electrode input impedance:$10^{12}\Omega$‖20pF
Current range: 2nA~2A, 10 ranges	Compliance voltage: ±21V
Maximum current output: 2A	CV and LSV scan rate: 0.001mV~10,000V/s
CA and CC pulse width: 0.0001~65,000s	Current increment during scan: 1mA@1A/ms
Potential increment during scan: 0.076mV@1V/ms	SWV frequency: 0.001~100 kHz
DPV and NPV pulse width: 0.0001~1000s	AD data acquisition:16bit@1 MHz,20bit@1 kHz
DA Resolution:16bit, setup time:1μs	Minimum potential increment in CV: 0.075mV
IMP frequency: 10μHz~1MHz	Low-pass filters: covering 8-decade
Operating System: Windows 2000/NT/XP/ 7/8/10	Interface: USB 2.0
Weight / Measurements: 6.5kg, 36.5 x 30.5 x16 cm	

TECHNICAL ADVANTAGES

1. Polarization curve

It can complete linear polarization curve and Tafel plot measurements. The user can set the anodic reversal current (passivation film breakdown current) of the cyclic polarization curve to determine material's pitting potential and protection potential and evaluate the its susceptibility to intergranular corrosion. The software employs non-linear fitting to analyze polarization curve, and can make fast evaluation of material's anti-corrosion ability and inhibitors.
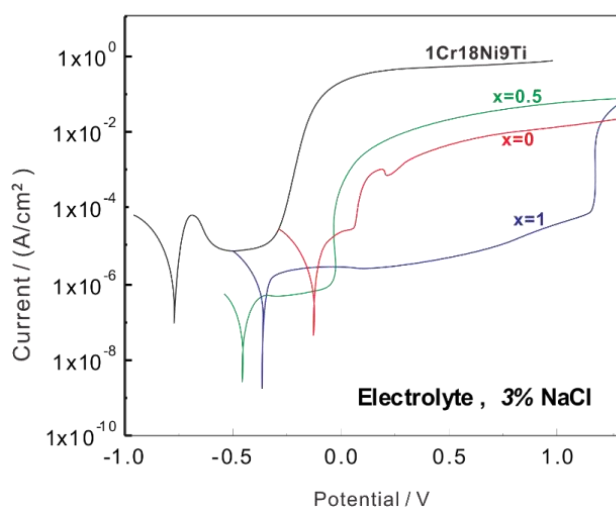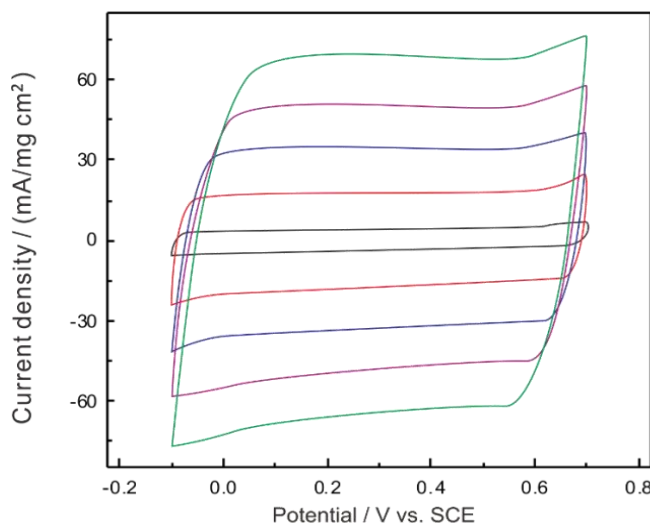

Polarization curve of Ti-based amorphous alloy &stainless steel in 3%NaCl solution

2. Voltammetry

It can do the following electroanalysis methods: Linear Sweep Voltammetry(LSV), Cyclic Voltammetry(CV).It integrates calculation of peak area, peak current and standard curve analysis.
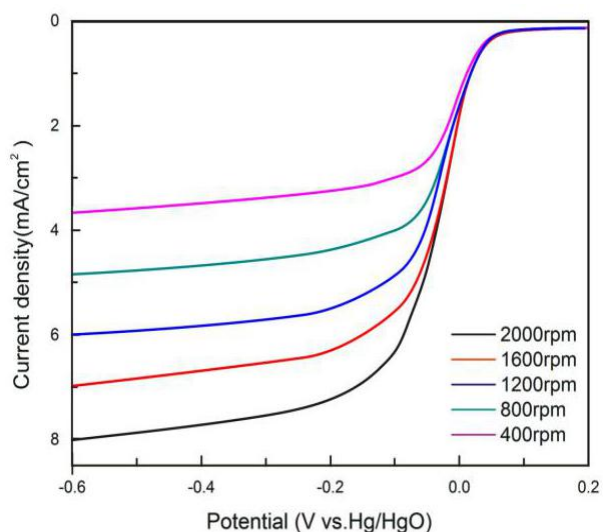
LSV curve: mesoporous carbon material in 0.1M KOH

CV curves of PPysupercapacitor in 0.5 mol/L H_2SO_4

3. Electrochemical Noise

With high-resistance follower and zero-resistance ammeter, it measures the natural potential/current fluctuations in corrosion system. It can be used to study pitting corrosion, galvanic corrosion, crevice corrosion, and stress corrosion cracking etc. Through noise spectrum, we can evaluate the inducement, growth and death of metastable pitting and crack. Based on calculation of noise resistance and pitting index, it can complete localized corrosion monitoring.

4. Full floating measurement

CS150 workstation uses full-floating working electrode. It can be used for autoclave electrochemical measurements, on-line corrosion monitoring of metallic components under the ground (rebar in concrete, etc.)

5. Software development kit (SDK)

We are able to provide API functions and development examples, which facilitates some users' requirements for secondary development and self-defined measurements. We can provide .dll file to do the development in Labview etc.
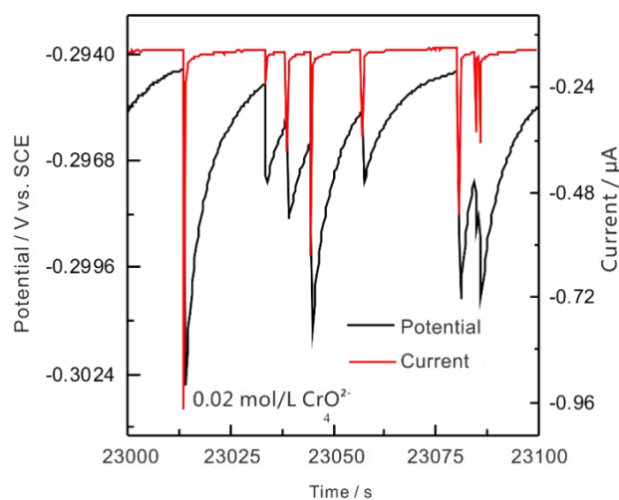
Electrochemical noise of low-carbon steel in 0.05mol/L Cl^-+0.1mol/L $NaHCO_3$

SOFTWARE FEATURES

Cyclic voltammetry

CS studio software provides users a versatile smoothing/differential/ integration kit, which can complete

the calculation of peak height, peak area and peak potential of CV curves. In CV technique, during the data analysis, there is function of selecting exact cycle(s) to show. You can choose to see a cycle or some cycles as you want. You can also export data or vector graph of an exact cycle or several cycles.
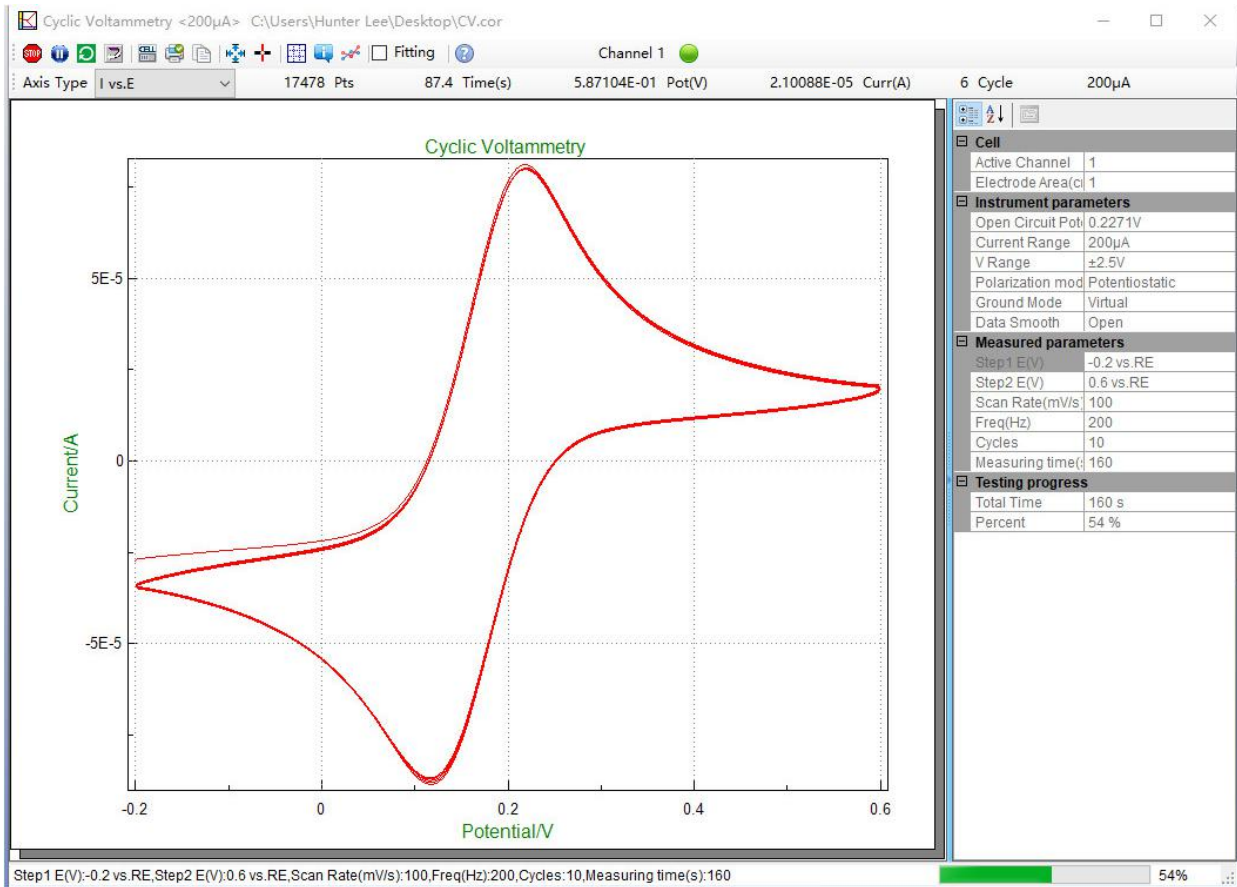

Tafel plot and corrosion rate

CS studio also provides powerful non-linear fitting on Butler-Volmer equation of polarization curve. It can calculate Tafel slope, corrosion current density, limitation current, polarization resistance, corrosion rate. It can also calculate the power spectrum density, noise resistance and noise spectrum resistance based on the electrochemical noise measurements.
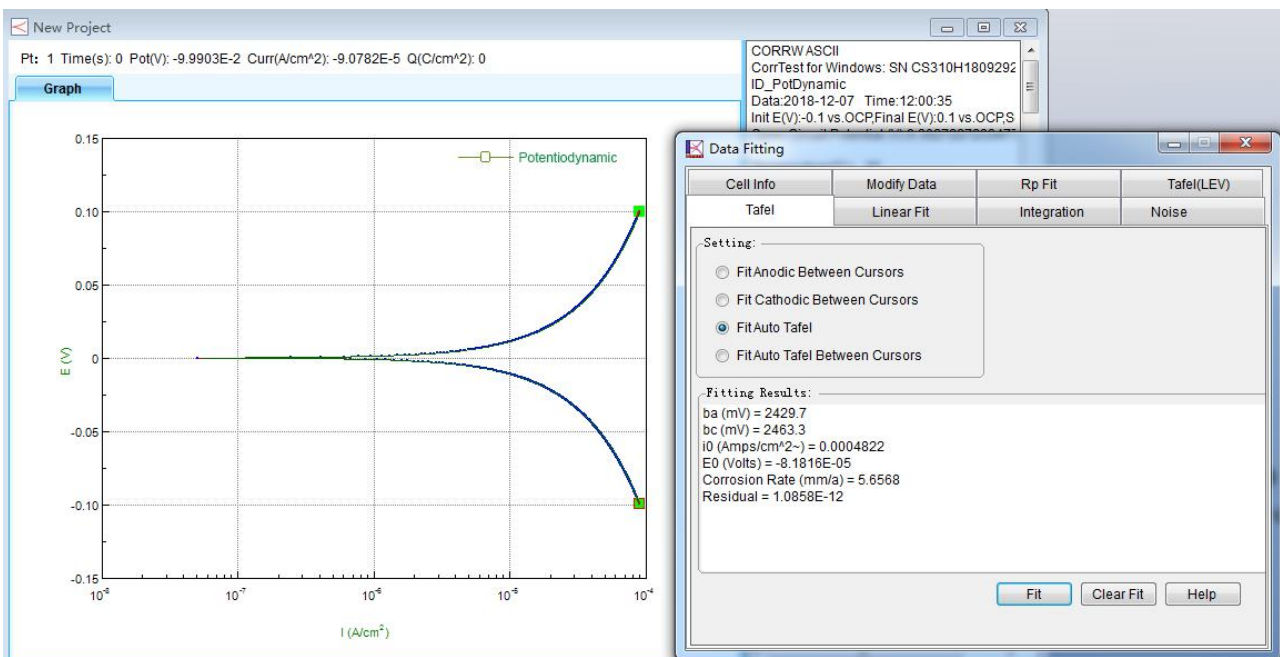
Battery Test and analysis:

charge & discharge efficiency, capacity, specific capacitance, charge & discharge energy.
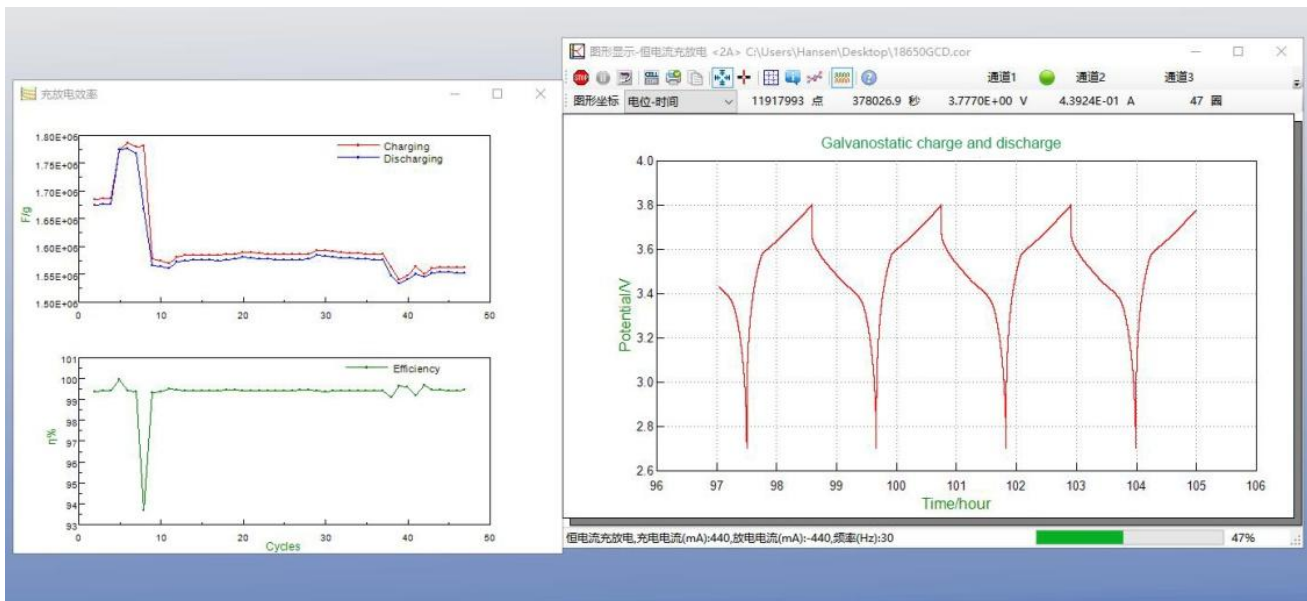
Real time saving of data: The data can be automatically saved even in case of sudden power off.

Combination test: it can facilitate the automation of experiments and save time. With the unique function of combination test, you can choose several techniques, and set the wait time, the start time, and the cycles. Choose the experiments you want to run. Then you can make auto measurement of the set experiments as you want without having to wait in the lab. This function is especially useful if you have multi experiments to run and save your time greatly.

Data open: You can open the data files by txt format in notepad directly. Data can also be opened in Origin