



**Wuhan Corrtest Instruments Corp., Ltd.** (Wuhan, China) started the design and research of electrochemical instruments since 1999, and was officially established in 2007. We specialize in R&D, manufacturing, and sales of potentiostat /galvanostat equipment. We have acquired ISO9001, CE, and CSA certifications. In 2016, Corrtest turned to be a joint-stock corporation.

CS series potentiostat / galvanostat are applied in corrosion, batteries, solar cell, advanced materials, electrochemical analysis, sensor, electro-synthesis, electrodeposition, etc.

Corrtest is now the main supplier of potentiostat product in China. Our products are used in almost all universities/ institutes in China. They are also exported to S. Korea, India, Indonesia, Pakistan, Thailand, Japan, Australia, USA, Mexico, Canada, Germany, UK, etc.

## After-sales Service

Warranty period: 5 years

Provide installation guidance and manual, software installation video.

Provide and technical service & repair service for **FREE**

Lifetime free software upgrading of the same model

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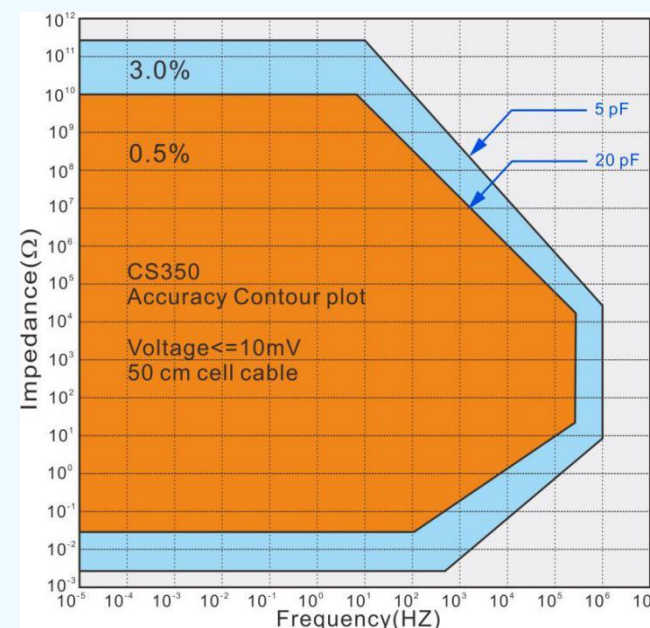
# Expert in Electrochemistry 20 years' experience In Potentiostat / Galvanostat



# Model CS350 (single channel)



CS350 potentiostat/galvanostat with built-in EIS is the most advanced and comprehensive model among single channel models. It contains a fast digital function generator, high-speed data acquisition circuitry, a potentiostat and a galvanostat. It has more than 40 electrochemical methods including built-in EIS (frequency range 10 $\mu$ Hz~1MHz). Max. current is  $\pm$ 2A, potential range is  $\pm$ 10V. It can be used for high current systems such as corrosion, the hot CO<sub>2</sub> reduction, and low current measurements as well. It supports 2-,3-,4-electrode system, and can run under floating or grounded mode.



## Application

- Reaction mechanism of Electro-synthesis, electrodeposition, anodic oxidation, electrolysis etc.
- Electrochemical analysis and sensor;
- New energy materials (Li-ion battery, solar cell, fuel cell, super capacitors), advanced functional materials, photo-electronic materials;
- Corrosion study of metals in water, concrete and soil, etc;
- Fast evaluation of corrosion inhibitor, water stabilizer, coating and cathodic protection efficiency.

## Specifications

Dual-channel high-speed 16bit/high-accuracy 24bit AD converter;  
 Built-in frequency response analyzer(FRA), frequency range: 10 $\mu$ Hz~1MHz;  
 High-bandwidth high input impedance amplifier unit  
 Built-in FPGA DDS digital signals synthesizer  
 High-power Potentiostat/Galvanostat/ZRA;  
 Potential control range:  $\pm$ 10V; Compliance voltage:  $\pm$ 21V(standard); Can be boosted to  $\pm$ 50V  
 Current control range:  $\pm$ 2A(standard); Can be boosted up to  $\pm$ 5A, or  $\pm$ 20A.  
 Potential resolution: 10 $\mu$ V; current resolution 1pA



"I've been using the Corrtest CS2350 Bipotentiostat for more than 2 months now. The device with the associated software is very clearly designed and allows the use of the device within a very short time. The software with the diverse measuring methods from "simple" potentiodynamic to detailed EIS measurements are very clear and easy to use with the evaluation options. Corrtest offers always a fast and reliable support"

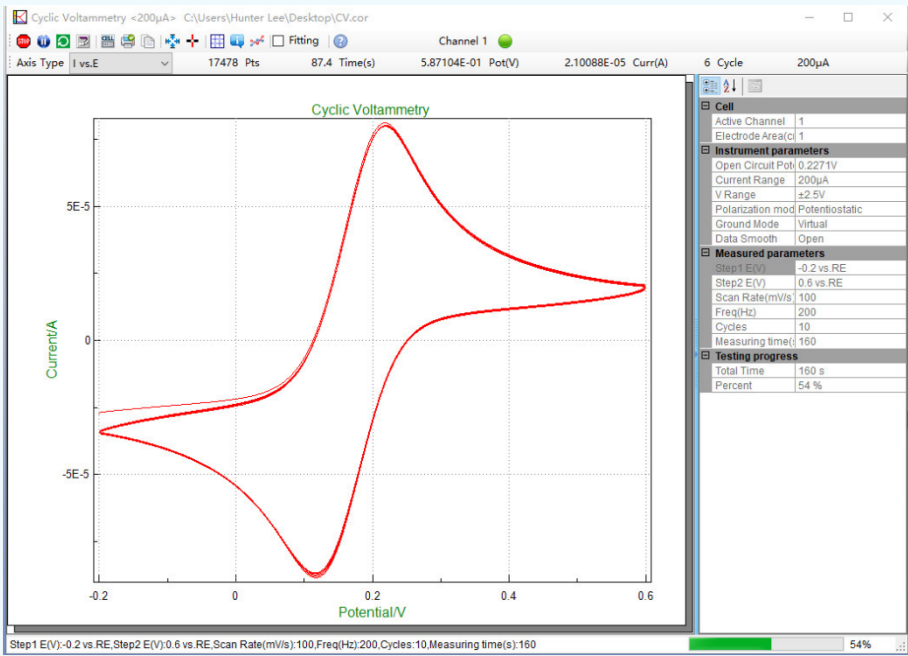
--Dr. Detlev Repenning, Germany

"M/s Wuhan Corrtest Instruments Corp., Ltd. has supplied & installed the Electrochemical spectroscopy system model # CS350 on March -2018 in our Metallurgical Engineering Laboratory, Indian Institute of Technology- BHU. The system is working fine since then and after sales support provided by the engineers is satisfactory and as per our expectation."

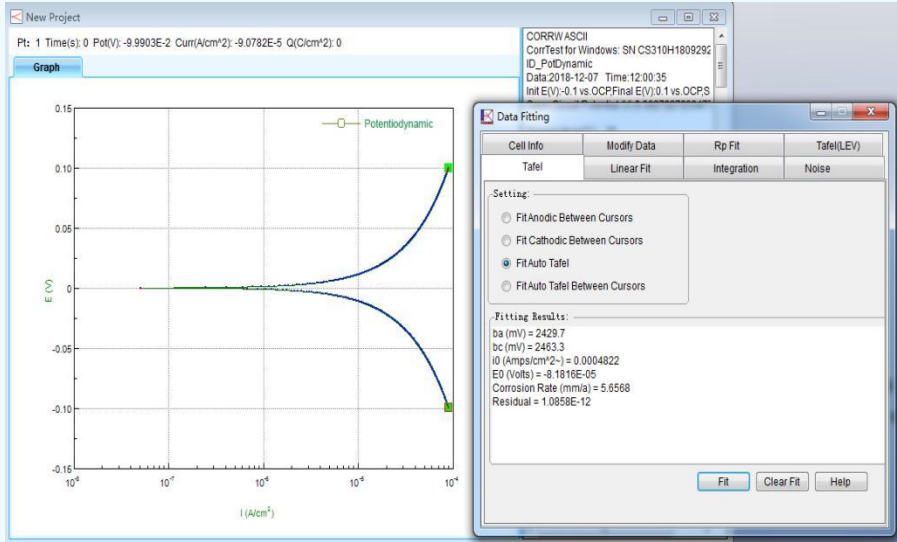
--Dr. Bratindranath, Indian Institute of Technology (BHU), India

Software Features

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.



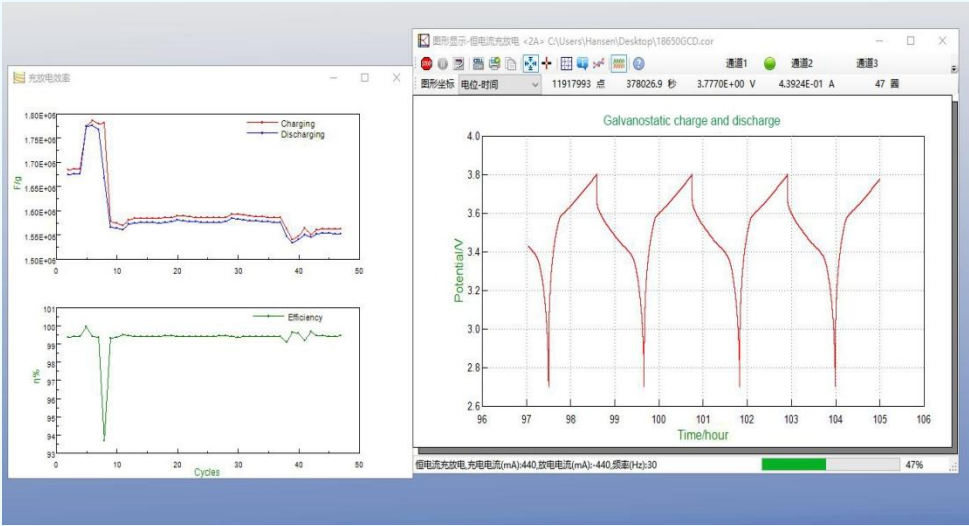
CS studio also provides powerful non-linear fitting on Butler-Volmer equation of polarization curve. It can calculate Tafel slope, corrosion current density, limitation current, polarization resistance, corrosion rate. It can also calculate the power spectrum density, noise resistance and noise spectrum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



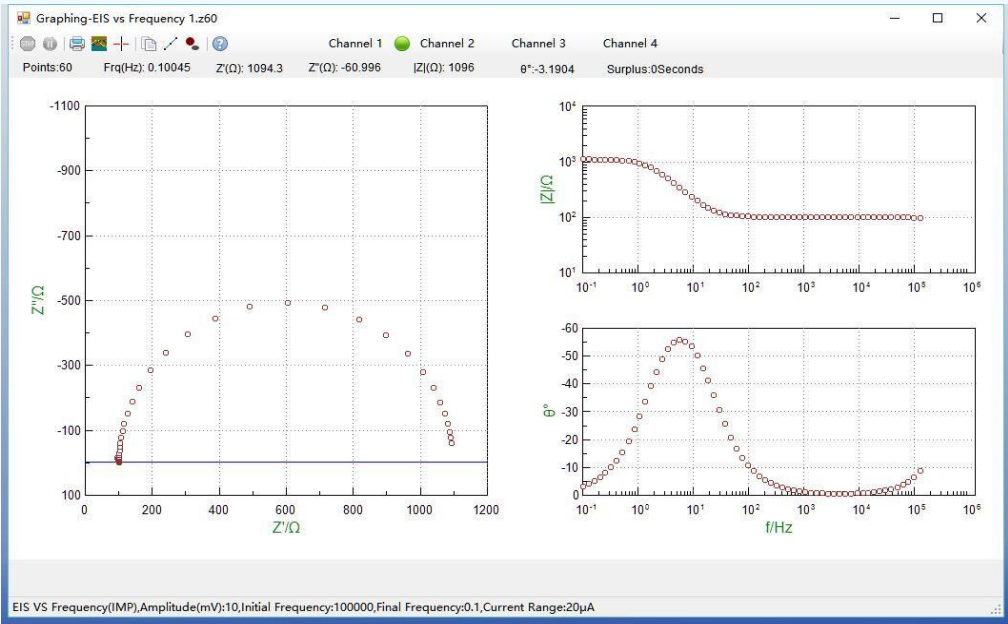
CS Studio software can achieve real time saving of the measuring data. The data can be automatically saved even in case of sudden power off.

CS studio kit has a built-in versatile timing policy for combined measurements, which can facilitate the automation of experiments and save time.

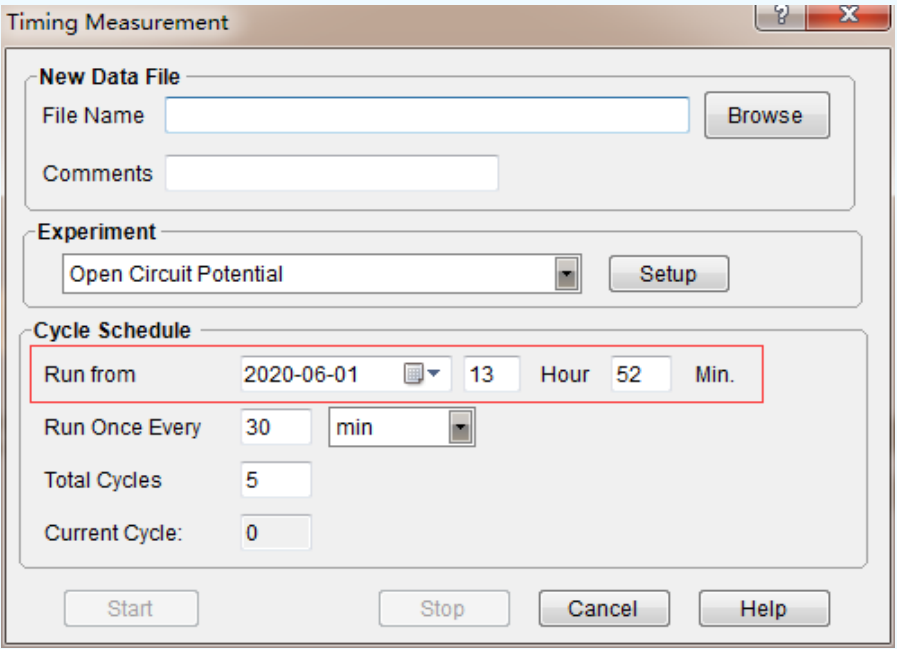
Battery analysis: charge & discharge efficiency, capacity, specific capacitance, charge & discharge energy.



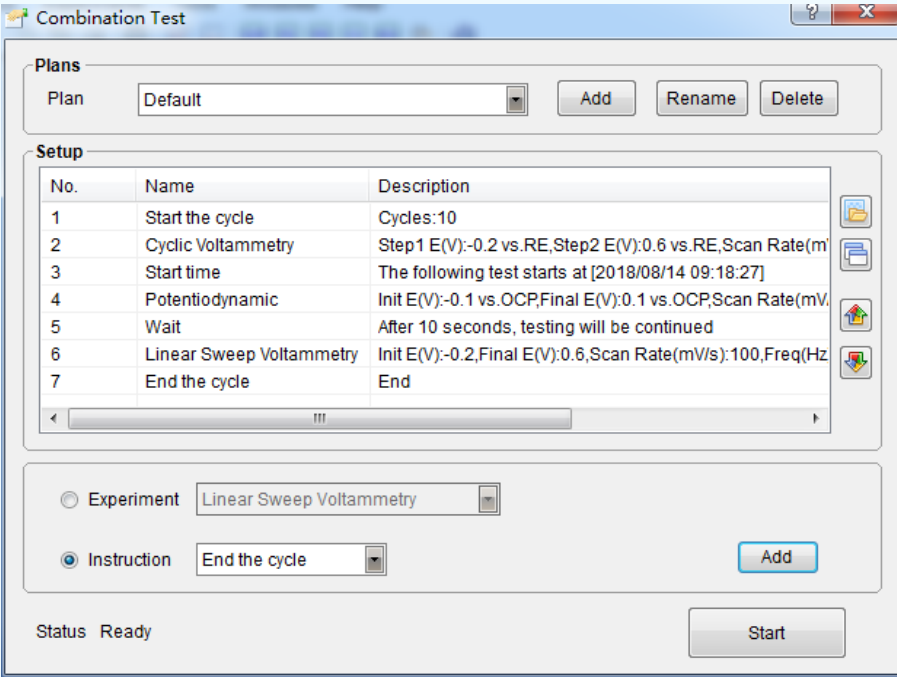
EIS analysis: Bode, Nyquist, Mott-Schottky plot



Timing measurements -- CS studio software can achieve timing measurements. After you set the experiment and time, click start, then the experiment will be run automatically when it is the time.



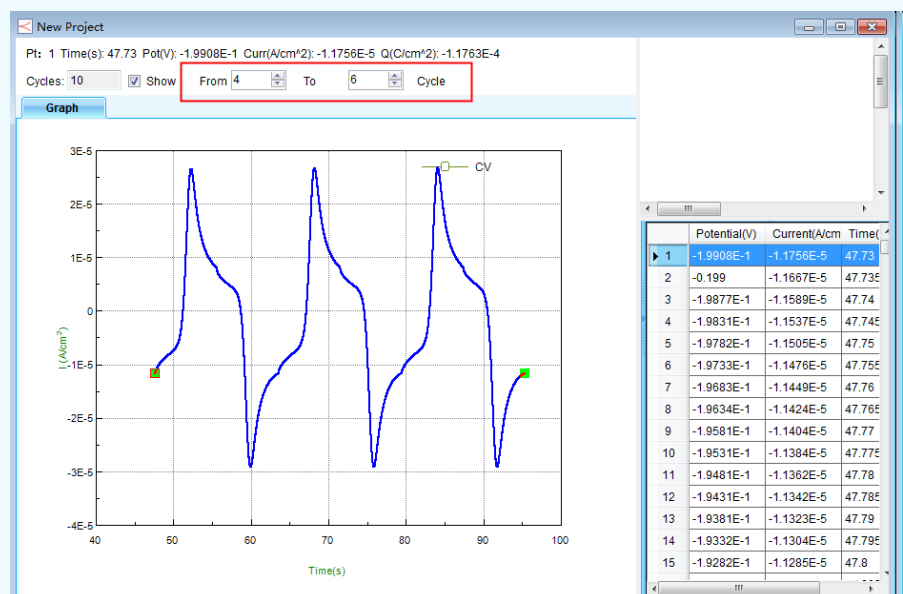
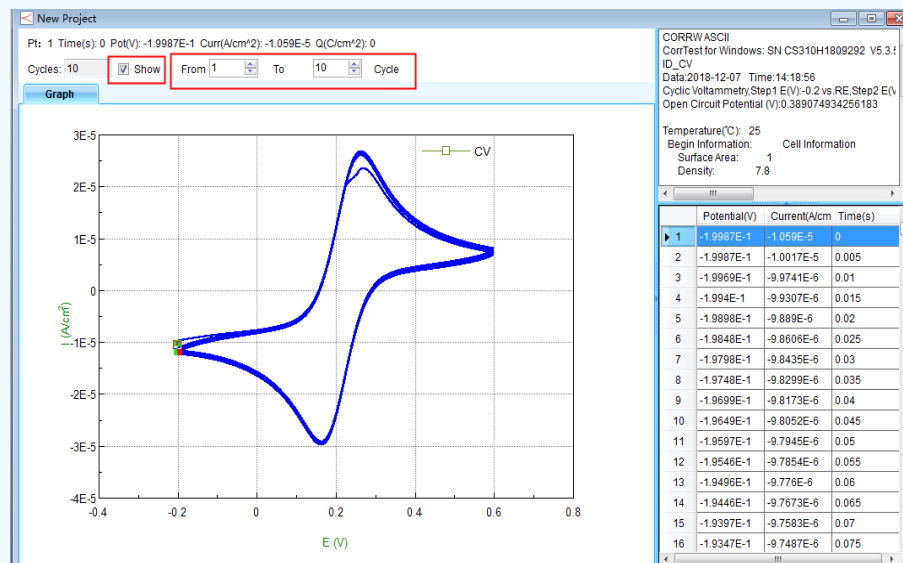
Combination test- With the unique function of combination test, you can choose several techniques, and set the wait time, the start time, and the cycles. Choose the experiments you want to run, and click Add. Then you can make auto measurement of the set experiments as you want without having to wait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



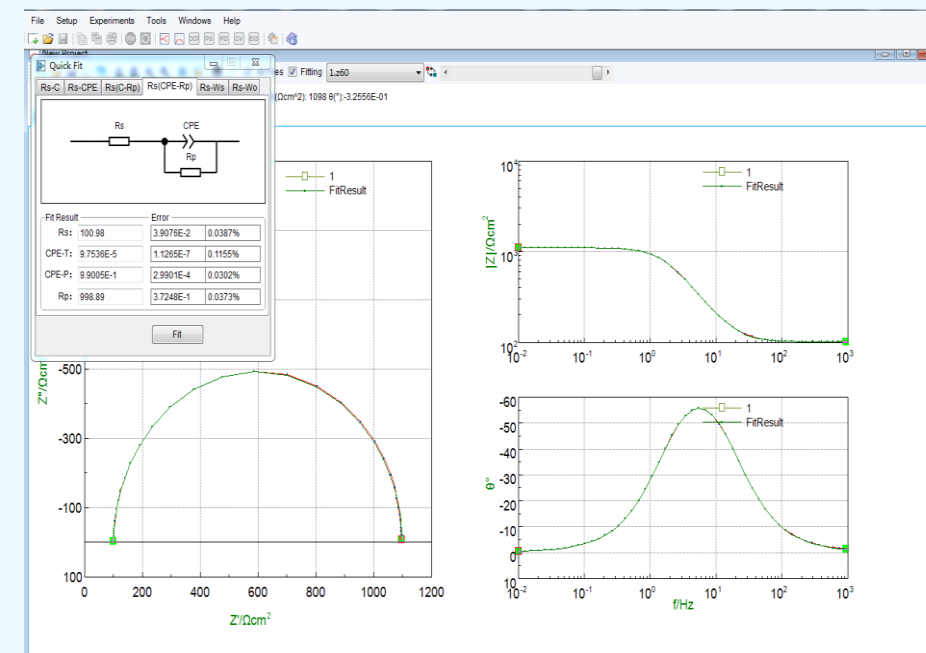
## Software features

Real-time saving-CS Studio software can automatically save the measured data which will not be lost in case of sudden power-off.

In CV technique and galvanostatic charge and discharge, 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.

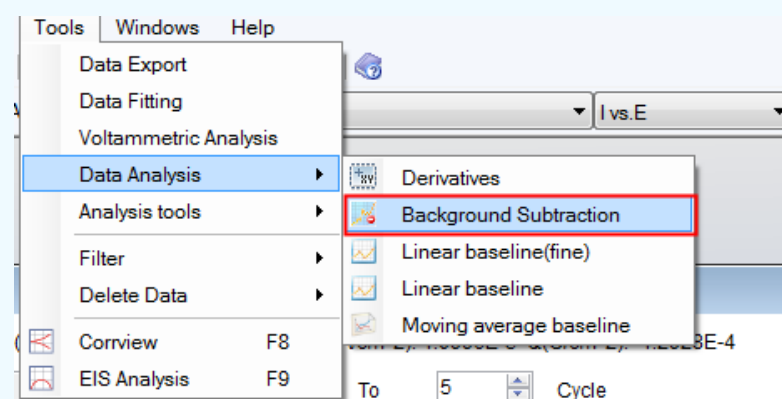


During EIS data analysis, there is built-in fitting function to draw the custom equivalent circuit. Firstly, draw the equivalent circuit, use the "Quick Fit" to obtain the parameters' value, and then substitute the value into the equivalent circuit.

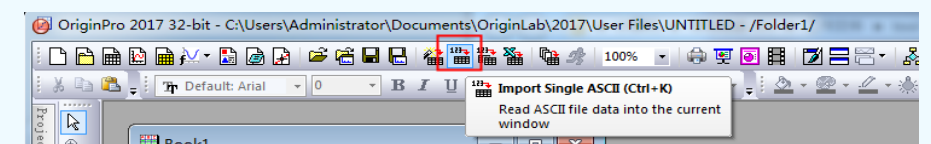
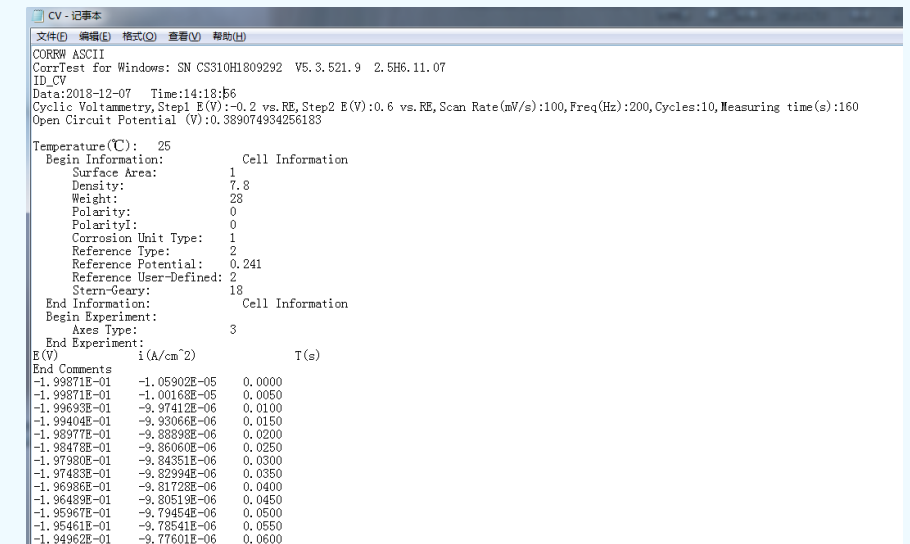


## Background subtraction

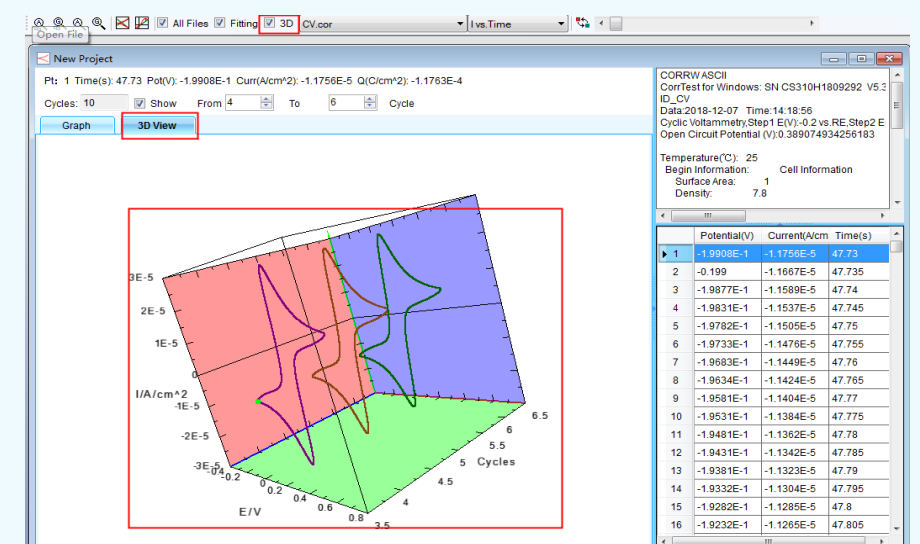
This function can be used to reduce the background noise's influence on the test.



You can open the ".cor"(all data files except EIS) and ".z60"(EIS) data files by txt(in notebook). They can also be opened in Origin by "Import single ASCII".



3D graph is supported.



# Specifications

Support 2-, 3- or 4-electrode system

Potential control range:  $\pm 10V$

Current control range:  $\pm 2A$

Potential control accuracy:  $0.1\% \times \text{full range} \pm 1mV$

Current control accuracy:  $0.1\% \times \text{full range}$

Potential resolution:  $10\mu V$  ( $>100Hz$ ),  $3\mu V$  ( $<10Hz$ )

Current sensitivity:  $1pA$

Rise time:  $<1\mu S$  ( $<10mA$ ),  $<10\mu S$  ( $<2A$ )

Current range:  $2nA \sim 2A$ , 10 ranges

Reference electrode input impedance:  $10^{12}\Omega$  | |  $20pF$

Maximum current output:  $2A$

Compliance voltage:  $\pm 21V$

Current increment during scan:  $1mA @ 1A/ms$

CV and LSV scan rate:  $0.001mV \sim 10,000V/s$

Potential increment during scan:  $0.076mV @ 1V/ms$

CA and CC pulse width:  $0.0001 \sim 65,000s$

DPV and NPV pulse width:  $0.0001 \sim 1000s$

SWV frequency:  $0.001 \sim 100 kHz$

Minimum potential increment in CV:  $0.075mV$

AD data acquisition:  $16bit @ 1 MHz$ ,  $20bit @ 1 kHz$

Potential and current range: Automatic

DA Resolution:  $16bit$ , setup time:  $1\mu s$

Low-pass filters: Covering 8-decade

Communication interface: USB

Operating System requirements: Windows

Dimensions/weight:  $36 \times 30 \times 16cm$ ,  $6KG$

## Electrochemical Impedance Spectroscopy(EIS)

### Signal generator

Frequency range:  $10\mu Hz \sim 1MHz$

AC amplitude:  $1mV \sim 2500mV$

Output impedance:  $50\Omega$

DC Bias:  $-10 \sim +10V$

Waveform: sine wave, triangular wave and square wave

Wave distortion:  $<1\%$

Scanning mode: logarithmic/linear, increase/decrease

### Signal analyzer

Integral time: minimum:  $10ms$  or the longest time of a cycle

Maximum:  $10^6$  cycles or  $10^5s$

Measurement delay:  $0 \sim 10^5s$

### DC offset compensation

Potential automatic compensation range:  $-10V \sim +10V$

Current compensation range:  $-1A \sim +1A$

Bandwidth: 8-decade frequency range, automatic and manual setting

# Techniques

Model CS350 is the most comprehensive single-channel model with all the techniques.

With wide applications and versatile functions, it can be an ideal tool for researches of various fields. It is also suitable for teaching.

## 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)
- Chronoamperometry (CA)
- Chronocoulometry (CC)

## Voltammetry

- Linear Sweep Voltammetry (LSV)
- Cyclic Voltammetry (CV)
- Staircase Voltammetry (SCV)
- Square Wave Voltammetry (SWV)
- Differential Pulse Voltammetry (DPV)
- Normal Pulse Voltammetry (NPV) #
- Differential Normal Pulse Voltammetry (DNPV)
- AC Voltammetry (ACV)
- 2<sup>nd</sup> harmonic AC Voltammetry (SHACV)
- Fourier Transform AC Voltammetry (FTACV)

## Amperometric

- Differential Pulse Amperometry (DPA)
- Double Differential Pulse Amperometry (DDPA)
- Triple Pulse Amperometry (TPA)
- Integrated Pulse Amperometric Detection (IPAD)

## Stripping Voltammetry

- Potentiostatic Stripping
- Linear Stripping
- Staircase Stripping
- Square Wave Stripping
- Differential Pulse Voltammetry Stripping
- Normal Pulse Voltammetry Stripping
- Differential Normal Pulse Voltammetry Stripping

## Electrochemical Impedance Spectroscopy (EIS)

- EIS vs Frequency (IMP)
- EIS vs Time (IMPT)
- EIS vs Potential (IMPE) (Mott-Schottky)

## Corrosion Measurements

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

## Battery test

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

## Extensions

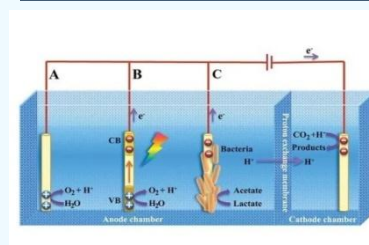
- Data Logger
- Electrochemical Stripping/ Deposition
- Bulk Electrolysis with Coulometry (BE)
- Rs Measurement



Corrosion & Coating



Battery & supercapacitor



Electrochemical catalysis



General Electrochemistry



Electrolysis & Electrodeposition



Opto-electrochemistry



Biologic Medicine

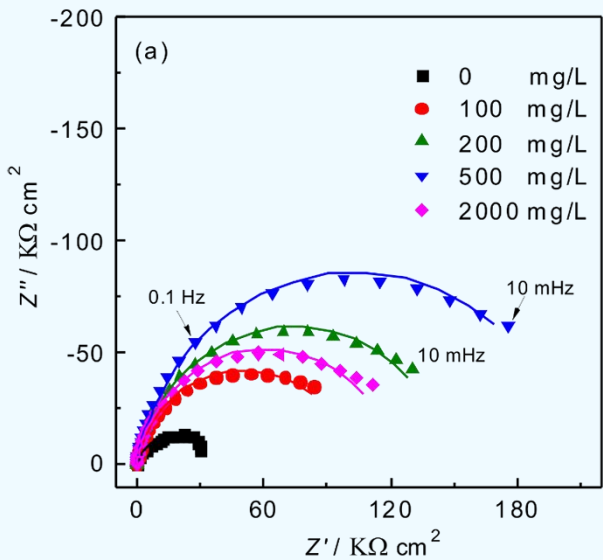


Sensors study

# Technical advantages

## 1. Impedance (EIS)

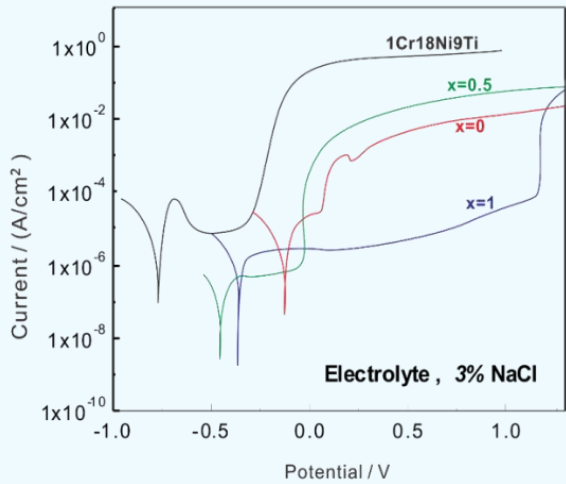
CS350 potentiostat applies correlation integral algorithm and dual-channel over-sampling technique, and has strong anti-interference ability. It is suitable for EIS measurements of high-impedance system ( $>10^9\Omega$ , such as coating, etc).



EIS of AA6063 Al alloy in  $Ce^{3+}$  containing 3% NaCl solution

## 2. Polarization curve

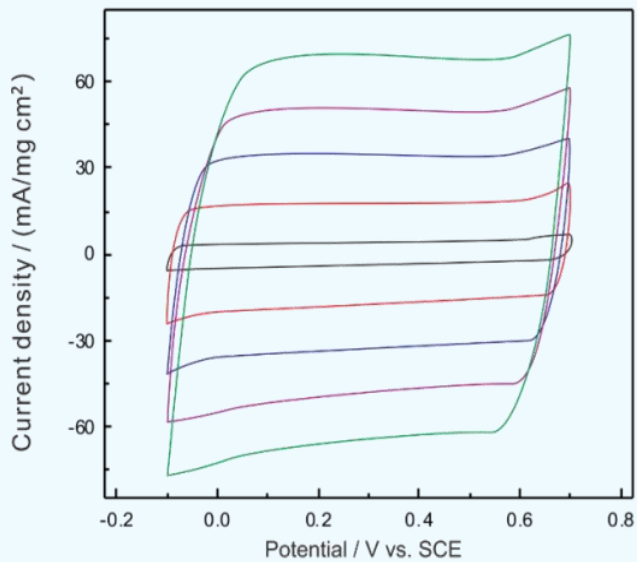
Tafel plot can be obtained. You can set the anodic reversal current of the cyclic polarization curve to get pitting potential and protection potential and evaluate the its susceptibility to intergranular corrosion. Non-linear fitting can analyze polarization curve, and make fast evaluation of material's anti-corrosion ability and inhibitors.



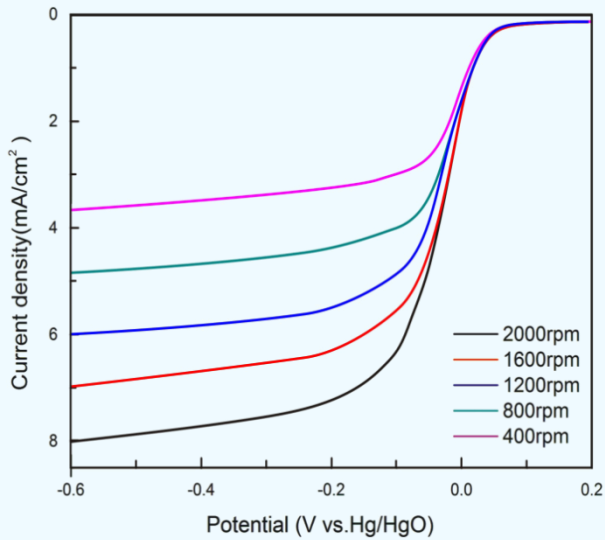
Polarization curve of Ti-based amorphous alloy & stainless steel in 3%NaCl

## 3. Voltammetry

Linear Sweep Voltammetry (LSV), Cyclic Voltammetry (CV), SCV, SWV, DPV, NPV, ACV, Stripping voltammetry etc. It integrates calculation of peak area, peak current and standard curve analysis.



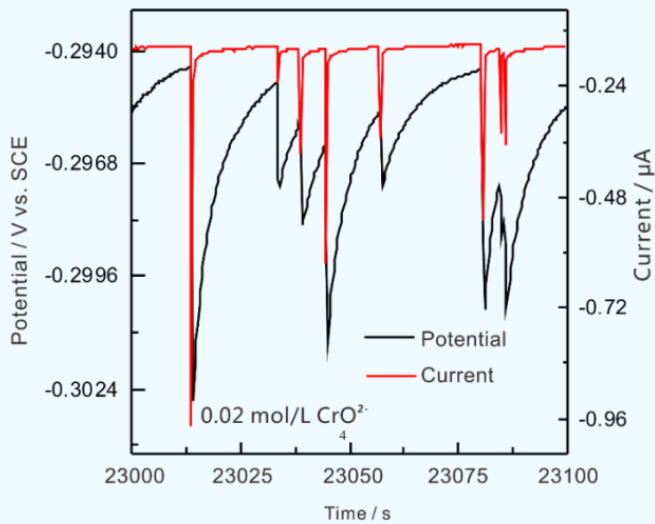
CV of PPy supercapacitor in 0.5 mol/L  $H_2SO_4$



LSV: mesoporous carbon material in 0.1M KOH

## 4. 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. Based on calculation of noise resistance and pitting index, it can complete localized corrosion monitoring.



EN of low-carbon steel in 0.05mol/L  $Cl^-$ +0.1mol/L  $NaHCO_3$

## 5. Full floating measurement

Full-floating mode be used for autoclave electrochemical measurements, on-line corrosion monitoring of metallic components under the ground (rebar in concrete, etc.)

## 6. 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 in Labview etc. We will provide .dll file.

Besides the most comprehensive Model CS350, you can also have other options for the single-channel models based on your research interest and budget.

## Model CS310 with built-in EIS

Current output:  $\pm 2A$ ; Potential control range:  $\pm 10V$ ; Compliance voltage:  $\pm 21V$ ; Built-in EIS frequency range:  $10\mu Hz \sim 1MHz$ .

CS310 is a cost-effective model for researchers who will need EIS, CV, LSV, galvanostatic charge & discharge, OCP, polarization curve(Tafel) etc. It can be used for areas of corrosion, battery and many others. The difference between CS350 and CS310 is that CS350 includes more voltammetric methods, such as DPV, NPV, SWV, ACV, DNPV and voltammetry stripping techniques, which are not included in CS310. It can be updated to model CS350 if you have the need in the future.

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)
- Chronocoulometry (CC)

Voltammetry

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

Electrochemical Impedance Spectroscopy (EIS)

- EIS vs Frequency (IMP)
- EIS vs Time (IMPT)
- EIS vs Potential (IMPE)(Mott-Schottky)

Corrosion Measurements

- Cyclic polarization curve (CPP)
- Linear polarization curve (LPR)
- Electrochemical Potentiokinetic Reactivation (EPR)

- Electrochemical Noise (EN)
- Zero resistance Ammeter (ZRA)

Battery test

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

Extensions

- Data Logger
- Electrochemical Stripping/ Deposition
- Bulk Electrolysis with Coulometry (BE)
- $R_s$  Measurement

## Model CS300

Model CS300 doesn't include EIS. It includes all the voltammetric methods and some other techniques. It's especially suitable for electro-analysis areas such as heavy metal ions concentration inspection. Model CS300 can be updated to CS350 if you have the need in the future.

## Model CS150

Current output:  $\pm 2A$ ; Potential control range:  $\pm 10V$ ; Compliance voltage:  $\pm 21V$ .

Model CS150 is a cost-effective and basic model for you. With basic methods such as potentiostatic (I-T), CV, LSV, Potentiodynamic(Tafel), GCD, it's suitable for various applications such as pitting corrosion measurement of surgical implants of medicine field, the carbon dioxide reduction, the electro-catalysis, battery charge and discharge tests, etc. It can be updated to more advanced model. Techniques are:

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)

Voltammetry

- Linear Sweep Voltammetry (LSV)
- Cyclic 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 Electrolysis with Coulometry (BE)
- $R_s$  Measurement

Models’ comparison

Techniques		CS150	CS300	CS310	CS350
Stable polarization	Open Circuit Potential (OCP)	√	√	√	√
	Potentiostatic (I-T curve)	√	√	√	√
	Galvanostatic	√	√	√	√
	Potentiodynamic(Tafel plot)	√	√	√	√
	Galvanodynamic	√	√	√	√
Transient polarization	Multi-Potential Steps	√	√	√	√
	Multi-Current Steps	√	√	√	√
	Potential Stair-Step (VSTEP)	√	√	√	√
	Galvanic Stair-Step (ISTEP)	√	√	√	√
Chrono methods	Chronopotentiometry (CP)	√	√	√	√
	Chronoamperometry (CA)	√	√	√	√
	Chronocoulometry (CC)	√	√	√	√
Voltammetry	Cyclic Voltammetry (CV)	√	√	√	√
	Linear Sweep Voltammetry (LSV)(I-Vmeasurement)	√	√	√	√
	Staircase Voltammetry (SCV) #		√		√
	Square wave voltammetry (SWV) #		√		√
	Differential Pulse Voltammetry (DPV)#		√		√
	Normal Pulse Voltammetry (NPV)#		√		√
	Differential Normal Pulse Voltammetry (DNPV)#		√		√
	AC voltammetry (ACV) #		√		√
	2nd Harmonic A.C.Voltammetry (SHACV)		√		√
Amperometry	Differential Pulse Amperometry (DPA)				√
	Double Differential Pulse Amperometry (DDPA)				√
	Triple Pulse Amperometry (TPA)				√
	Integrated Pulse Amperometric Detection (IPAD)				√
EIS	EIS vs Frequency (IMP)			√	√
	EIS vs Time (IMPT)			√	√
	EIS vs Potential (IMPE)(Mott-Schottky)			√	√
Corrosion test	Cyclic polarization curve (CPP)	√	√	√	√
	Linear polarization curve (LPR)	√	√	√	√
	Electrochemical Potentiokinetic Reactivation (EPR)	√	√	√	√
	Electrochemical Noise(EN)	√	√	√	√
	Zero resistance Ammeter (ZRA)	√	√	√	√
Battery test	Battery charge and discharge	√	√	√	√
	Galvanostatic charge and discharge(GCD)	√	√	√	√
	Potentiostatic Charging and Discharging(PCD)	√	√	√	√
	Potentiostatic Intermittent Titration Technique(PITT)	√	√	√	√
	Galvanostatic Intermittent Titration Technique(GITT)	√	√	√	√
Extensions	Data Logger	√	√	√	√
	Bulk electrolysis with Coulometry (BE)	√	√	√	√

# There is the corresponding stripping methods

Real independent 2 channels.  
Support RE, CE, WE 1, WE 2 system(RRDE)  
Also supports two independent systems:  
System 1#: WE 1, RE 1, CE 1  
System 2#: WE 2, RE 2, CE 2

- ✓ Support 2-, 3- or 4-electrode system
- ✓ Potential control range:  $\pm 10\text{V}$
- ✓ Maximum Current:  $\pm 2\text{A}$
- ✓ Compliance voltage:  $\pm 21\text{V}$
- ✓ If need EIS choose model CS2350 Bipotentiostat



CS2150 bipotentiostat has two independent sets of built-in potentiostat/galvanostat. It supports one or 2-working electrode configuration(RE, CE, WE1, WE2). Typical applications are rotating ring-disk electrode (RRDE/RDE) and hydrogen diffusion test (HDT).

Thanks to the independent double channels, the experiment can be conducted at the same time in each channel(i.e., 2 cells system, RE1, CE1, WE1 & RE2, CE2, WE2 ). CS2150 bipotentiostat is the real double-channel potentiostat. It uses Ethernet connection and supports floating and grounded mode. You can choose to use only one channel or both channels. CS2150 equals to two sets of single-channel potentiostat (MODEL CS150) in one chassis. It brings convenience to the researches and save their time. It is a popular cost-effective product among users.

Built-in EIS frequency range:  $10\mu\text{Hz}\sim 1\text{MHz}$  is optional. You can add EIS to one channel or both dual channels as you want.

### Rotating Ring-Disk Electrode(RRDE)

Oxidation/reduction reaction (ORR) study: while measuring the polarization curve of disk electrode in the main channel, apply a constant polarization potential on the ring electrode, and thus detect the intermediate products on the disk electrode. RRDE test becomes the typical method for ORR study. CS2150 can be connected to a RRDE equipment from Pine or ALS. We can supply RRDE-3A setup (100 to 8,000 rpm rotating rate, ALS, Japan) with our bipotentiostat.



### Hydrogen Diffusion Test(HDT)

CS2150 bipotentiostat is combined with H-cells. By measuring current of cathode hydrogen charging and hydrogen atoms anode oxidation, it can further calculate the diffusion coefficient of hydrogen atoms in metal and hydrogen flux.



### Techniques in each channel(standard)

Stable polarization

- Open Circuit Potential (OCP)
- Potentiostatic (I-T curve)
- Galvanostatic
- Potentiodynamic (Tafel plot)
- Galvanodynamic (DGP)

Transient Polarization

- Multi Potential Steps
- Multi Current Steps
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- Galvanic Stair-Step (ISTEP)

Voltammetry

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

Corrosion Measurements

- Cyclic polarization curve (CPP)
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Extensions

- Data Logger
- Electrochemical Stripping/ Deposition
- Bulk Electrolysis with Coulometry (BE)
- $R_s$  Measurement

## Bipotentiostat model CS2350

There are 2 independent channels. One channel equals to single-channel model CS350, the other equals to CS150. There is built-in EIS technique in one of the two channels. One channel includes all the electrochemical methods incl. EIS. The other channel includes some of the basic methods.

The most cost-effective, high current, high voltage, independent dual channel potentiostat/galvanostat among the mainstream bipotentiostat models all over the world.

# 4-channel potentiostat

## Model CS3104

## Model CS3004

One of the four channels includes EIS module for model CS3104. Each channel includes EIS module for model CS3004.



Four-channel potentiostat CS3104/ CS3004 can achieve simultaneous measurements for up to 4 channels. For each channel, current control range is  $\pm 500\text{mA}$ , potential control range is  $\pm 10\text{V}$ . It supports floating mode, and uses Ethernet connection.

Each channel is completely independent. You can choose to use just one or some of the channels. Two channels can jointly do RRDE as a bipotentiostat. Multichannel potentiostat brings convenience to those who have many samples, and is an ideal equipment in study of energy materials, metal corrosion etc.

Three-channel, 5~8 channel potentiostat are also available. You can find the one you want no matter what budget.

### Advantages

- High current/voltage: Applied potential range  $\pm 10\text{V}$ , current range  $\pm 500\text{mA}$ . It can meet the needs of most studies.
- Comprehensive functions: There are more than 40 techniques for various studies. EIS ( $10\mu\text{Hz}\sim 1\text{MHz}$ ) and versatile Voltammetry module are integrated in the instrument.
- Warranty. 5 years warranty. We're the manufacturer, and our engineers will provide technical support anytime you need.
- Low cost. The price includes instrument host, software(experiment control & data processing), necessary cables, dummy cell. No other charges.

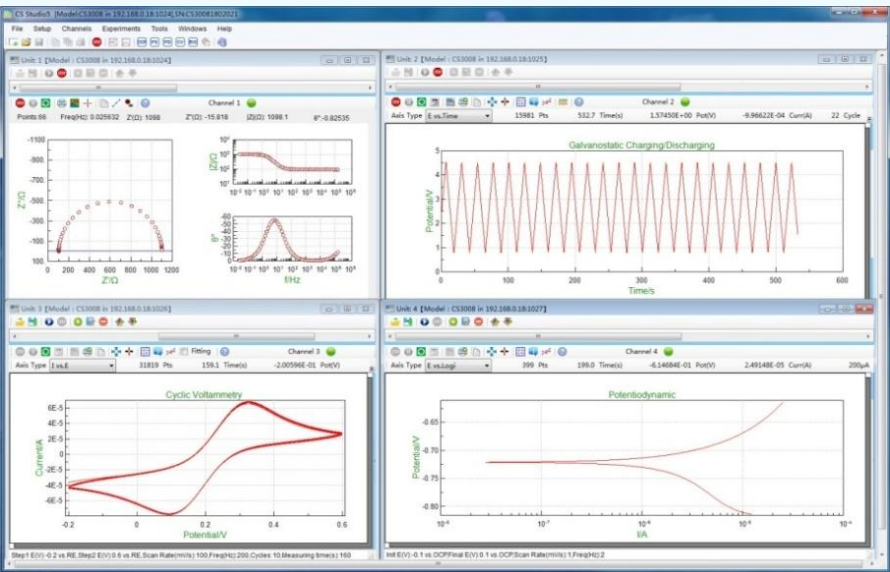
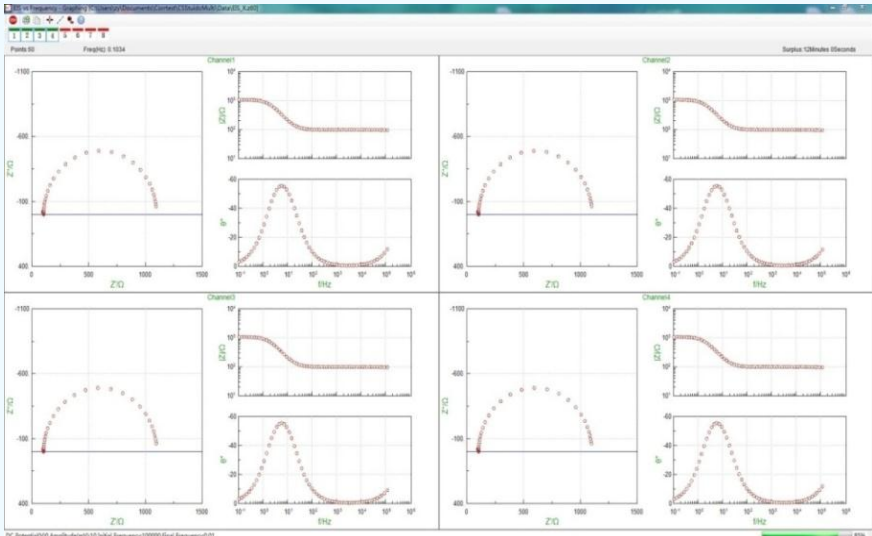
- Reliability & quality. We've been in the market for 20 years, and now is the No. 1 brand of potentiostat product in China

### Key Specifications

- Number of channels: 4
- Communication: Ethernet
- Potential control range:  $\pm 10\text{V}$
- Maximum current output:  $\pm 500\text{mA}$
- Current range:  $\pm 2\text{nA} \sim \pm 500\text{mA}$
- Potential resolution:  $10\mu\text{V}(>100\text{Hz})$ ,  $3\mu\text{V}(<10\text{Hz})$
- Current resolution:  $<1\text{pA}$
- Frequency range:  $10\mu\text{Hz}\sim 1\text{MHz}(\text{Optional})$

### Simultaneous measurements

You can run a same experiment in each channel (eg. all EISs, as is shown in below pic.), or 4 different experiments in each channel at the same time.



# 8-channel potentiostat

## Model CS3108

## Model CS3008

One of the eight channels includes EIS module for model CS3108. Each channel includes EIS module for model CS3008.



# 32 channels potentiostat



# Model CS100 Pocket potentiostat



- Small and light, portable and convenient
- Simple to install and easy to operate.
- High accuracy, current resolution is 100fA, and measurement accuracy is 0.1% of the range.
- Internal lithium battery facilitates the outdoor on-site measurement
- The circuit adopts a floating-ground design

## Key specifications

Communication : USB/Bluetooth

Power supply: built-in li-battery 6000mAH@3.7V / USB port charge

Size / weight: 150mm x 90mm x 30mm, 500g

Support 2-, 3-or 4-electrode system

Potential control range:  $\pm 10V$

Maximum current:  $\pm 45mA$

Compliance voltage:  $\pm 12V$

## Techniques

Open Circuit Potential (OCP), Potentiostatic (i-t curve), Potentiodynamic (Tafel)

Multi Potential Steps, Multi Current Steps, Potential Stair-Step (VSTEP), Galvanic Stair-Step (ISTEP), Chronopotentiometry (CP), Chronoamperometry (CA), Chronocoulometry (CC)

**Voltammetry:** CV, LSV, SCV, SWV, DPV, NPV, DNPV, Linear sweep Stripping Voltammetry, Staircase Stripping voltammetry, SWV Stripping, DPV Stripping, NPV Stripping, DNPV Stripping, Differential Pulse











**Battery testing:** Battery Charge and Discharge, Galvanostatic Charge and Discharge (GCD), Potentiostatic Charging and Discharging (PCD), Potentiostatic Intermittent Titration Technique (PITT), Galvanostatic Intermittent Titration Technique (GITT)

**EIS:** EIS vs Frequency (IMP), EIS vs Time (IMPT), EIS vs Potential (IMPE) (Mott-Schottky)

**Corrosion:** Cyclic polarization curve (CPP), Linear polarization curve (LPR), Electrochemical Potentiokinetic Reactivation (EPR), Electrochemical Noise (EN) Zero resistance Ammeter (ZRA)

Electrodes & Cells

Type	Photo	Product	Specification	Type	Photo	Product	Specification
Reference electrode	A glass tube electrode with a black cable and a black connector at the top.	CS900 Saturated Calomel Electrode (SCE)	Saturated KCl solution	Counter electrode	A long, thin electrode with a black cable and a black connector at the top.	CS910 Platinum conductivity electrode	
	Two electrodes with black and white caps, and a yellow cap.	CS901 Ag/AgCl reference electrode	Ø4mm/Ø6mm Saturated KCl solution		A long, thin electrode with a black cable and a black connector at the top.	CS911 Platinum plate electrode *Other sizes are available	99.95%, 10x10x0.1mm
	A glass tube electrode with a black cable and a black connector at the top.	CS902 Hg/HgO reference electrode	Suitable for alkaline solution  1M KOH solution		A long, thin electrode with a black cable and a black connector at the top.	CS912 Platinum wire counter electrode	99.95%, Ø 0.5x37mm(wire)
	A glass tube electrode with a black cable and a black connector at the top.	CS903 Mercury/Mercurous sulfate electrode	Suitable for acid solution  Saturated K2SO4 solution		A long, thin electrode with a black cable and a black connector at the top.	CS913 Platinum mesh electrode *Other sizes are available	10*10mm
	A glass tube electrode with a black cable and a black connector at the top.	CS904 Cu/CuSO4 electrode	Saturated CuSO4 solution		A long, thin electrode with a black cable and a black connector at the top.	CS915 Graphite rod	Ø4/6mm, length 150mm
	Two electrodes with black and white caps, and a yellow cap.	CS905 Non-aqueous Ag/Ag+ reference electrode	Ø4mm/Ø6mm		Three electrodes with black and white caps, and a yellow cap.	CS916 Graphite electrode *The price is for one electrode	Ø2~ Ø5mm

Type	Photo	Product	Specification	Type	Photo	Product	Specification
Working electrode		CS920 carbon working Electrode *Other diameters are available	Dia. 3mm	Cells		CS930 Glass electrolytic Cell, 4 ports 250ml	*Include salt bridge and gas inlet/out let pipe Not incl. Electrodes  Other volumes are available
		CS921 Metal Electrode	Material: Carbon steel, stainless steel, copper Working area: 0.5cm <sup>2</sup>			CS931 Jacketed glass cell (not sealed) 50ML	Other volumes are available
		CS922 Platinum working electrode	Dia. 2mm			CS931S Jacketed glass cell (Sealed) 50ML	Other volumes are available
		CS923 Gold working electrode	Dia.2mm			CS932 H- cells (not sealed) 50ML	Volume:10~500 ML PTFE caps The two cells are separated by ion membrane which is prepared by user.
		CS924 Silver working electrode Other metals are available: Copper, Aluminum, Nickel, Zinc, Lead, Iron, Palladium	Dia. 2mm			CS932S H- cells (sealed) 50ML Other volumes are available	PTFE caps The two cells are separated by ion membrane which is prepared by user.

		CS925 micro electrode	-Pt 10μm/25μm -Gold 12.5μm/25μm			CS9320 H- cells	250ml/piece
Cells		CS933 Optoelectrochemical cell (Quartz)	50*50*50mm *Other sizes are available	Cells		CS936-2 Flat corrosion cell -Jacketed	Jacketed, water circulation for temperature control working area is 1cm <sup>2</sup> incl: Ag/AgCl reference electrode or SCE*1 Built-in Pt mesh(20*20mm)*1
		CS9330 Spectroelectrochemical cell	This kit includes: Pt mesh(WE), Pt wire counter electrode(CE), Ag/AgCl reference electrode(RE) Optical path: 8*6.5*1mm			CS937Glass cell + Teflon cap	Glass cell: 10ml Diameter of the three holes: φ6.35mm, φ6.35mm, φ6mm
		CS934 Coating evaluation cell	10mL Working area is 1cm <sup>2</sup> Incl. Ag/AgCl reference electrode*1 Graphite rod *1			CS938 Battery test cell	Sealed, stainless steel cell  Suitable for Li-battery three electrode test

	CS935 Seal electrolytic cell 50ML	Other volumes are available		CS941 Simple Cell Stand	Base material: PTFE provide 2 pieces cells (30ml)
	CS936-1 Flat corrosion cell -single	Single-deck working area is 1cm <sup>2</sup> incl.: Ag/AgCl reference electrode or SCE *1 Built-in Pt mesh(20*20mm)*1		CS945 Electrode clamp	Disassemble; Pt mesh or Pt plate(thickness 0~1mm) can be clamped. 6mm dia. PTFE rod