



CORRTEST

Instruments

CATÁLOGO DE SOLUCIONES

Instrumentación electroquímica



Ayscom dataTec es el nuevo Partner de **CorrTest Instruments**, fabricante de potenciostatos/galvanostatos y accesorios para medidas de corrosión, baterías, células solares, materiales avanzados, análisis electroquímicos, sensores, electrosíntesis, electrodeposición, etc.

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Potentiostat / Galvanostat

Single channel Potentiostat Model CS350

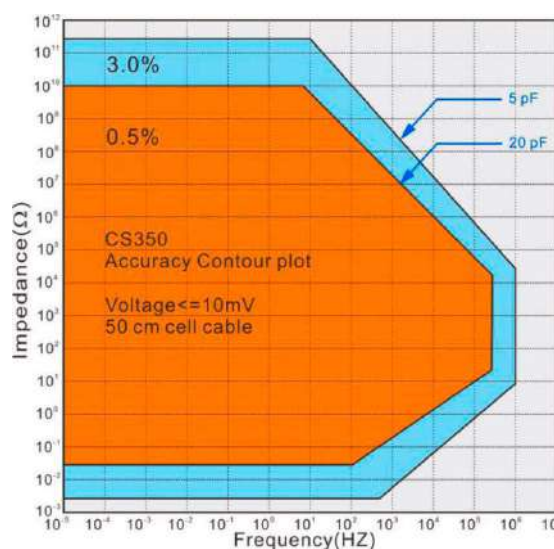
CS350 potentiostat/galvanostat with built-in EIS is the most advanced and comprehensive model among single channel models. It contains a fast digital function generator, high-speed data acquisition circuitry, a potentiostat and a galvanostat. It has more than 40 electrochemical methods including built-in EIS (10 μ Hz~1MHz). Max. current is ± 2 A, potential range is ± 10 V. It can be used for high current systems such as corrosion, the CO₂ reduction, and low current measurements as well. It's compatible to 2-,3-,4-electrode system, and support floating / grounded mode.



Key specs

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

EIS ACCURACY



Applications

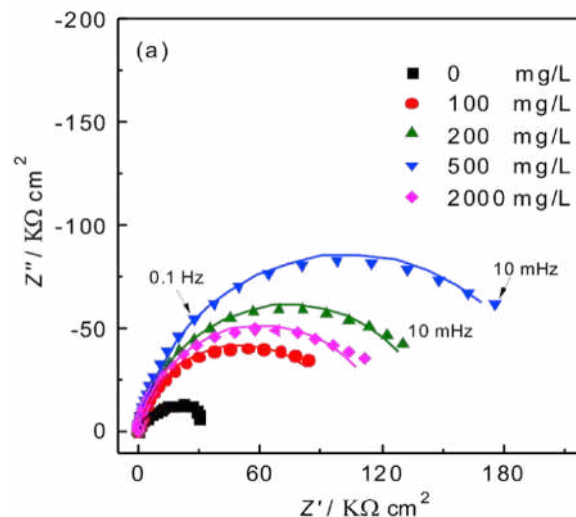
- ▶ Reaction mechanism of Electro-synthesis, electrodeposition, anodic oxidation, electrolysis etc.
- ▶ Electrochemical analysis and sensor;
- ▶ New energy materials (Li-ion battery, solar cell, fuel cell, super capacitors), advanced functional materials, photo-electronic materials;
- ▶ Corrosion study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

Technical advantages

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, concrete etc.).

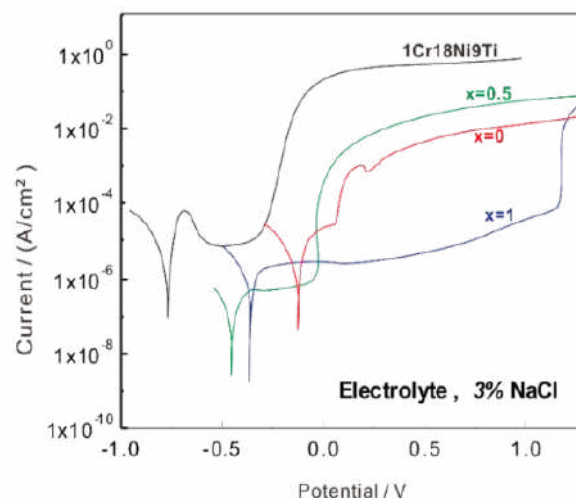
EIS of AA6063 Al alloy in Ce^{3+} containing 3% NaCl solution.



Polarization curve

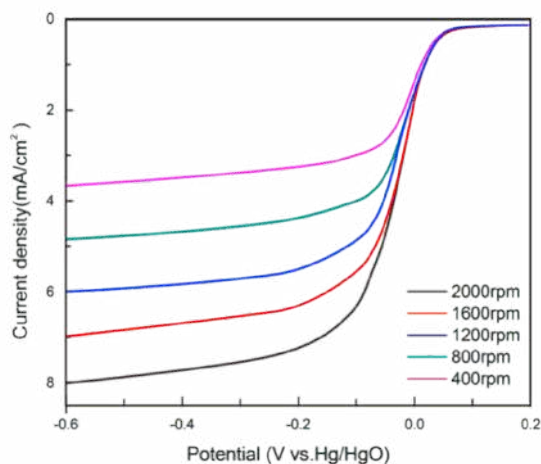
Tafel plot can be obtained. The user can set the anodic reversal current (passivation film breakdown current) of the cyclic polarization curve to obtain material's pitting potential and protection potential and evaluate the its susceptibility to intergranular corrosion. The software uses non-linear fitting 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.

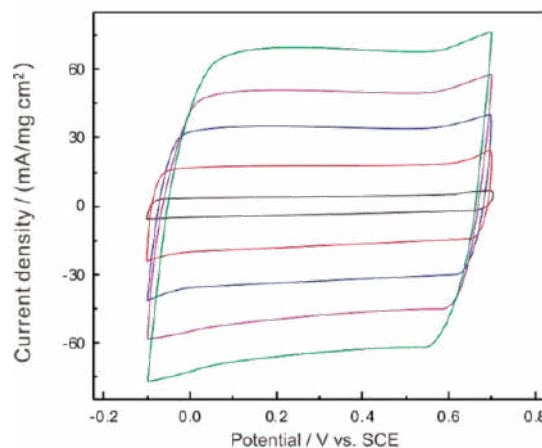


Voltammetry

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



LSV: mesoporous carbon material in 0.1M KOH.

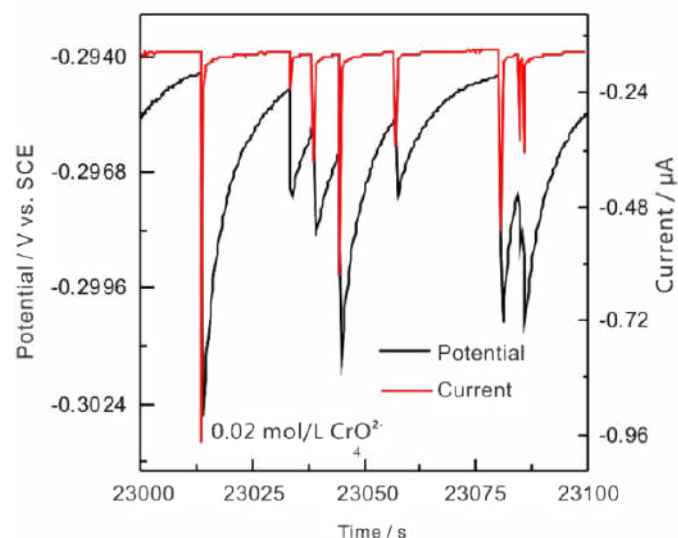


CV of PPy supercapacitor in 0.5 mol/L H_2SO_4

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.

Electrochemical noise of low-carbon steel in
0.05mol/L Cl⁻+0.1mol/L NaHCO₃



Power booster

Boosters are needed especially in fuel cell, high-power battery charge and discharge, electrolysis, electrodeposition etc. Current booster can boost the maximum applied current to be $\pm 5A$. Voltage booster can increase the maximum compliance voltage to $\pm 200V$.

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.)

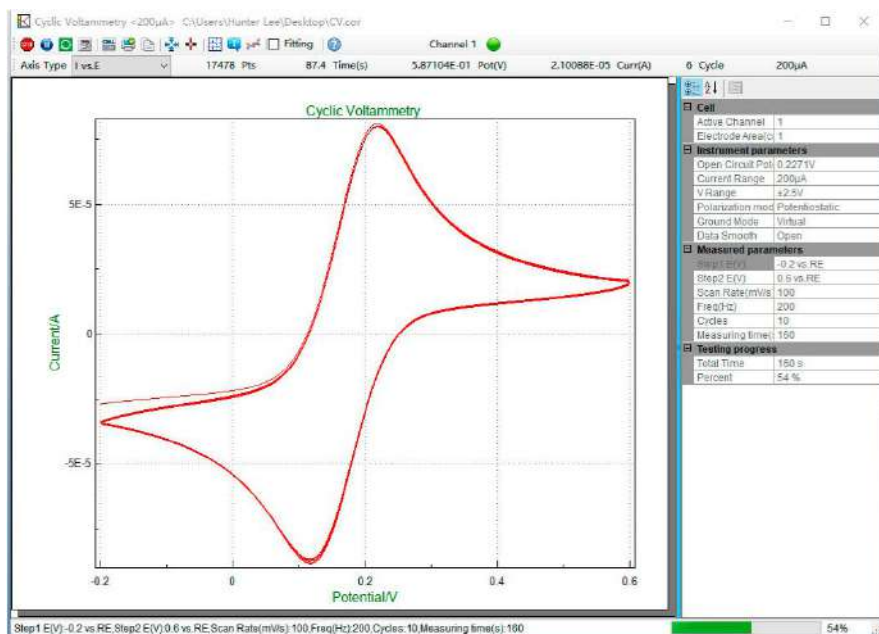
Software development kit (SDK)

We are able to provide API functions and development examples. We can supply .dll file so that the customer can do the software second development in Labview or Visual Basic .NET.

Software Features

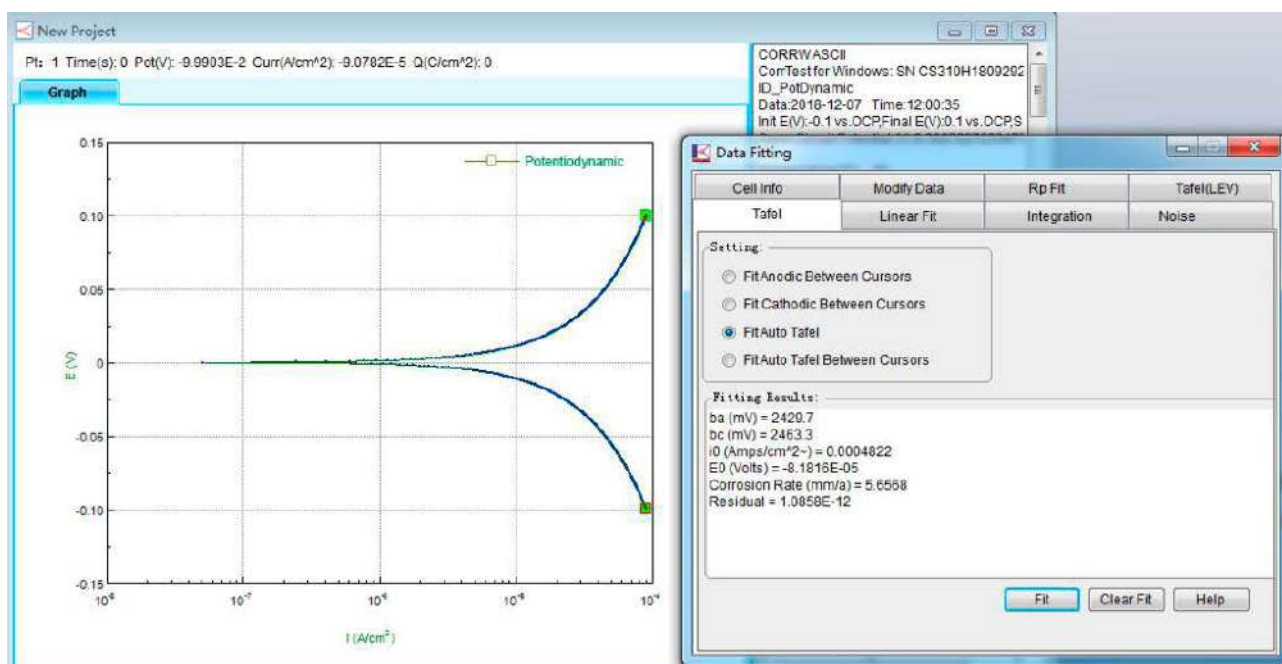
Cyclic Voltammetry

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.



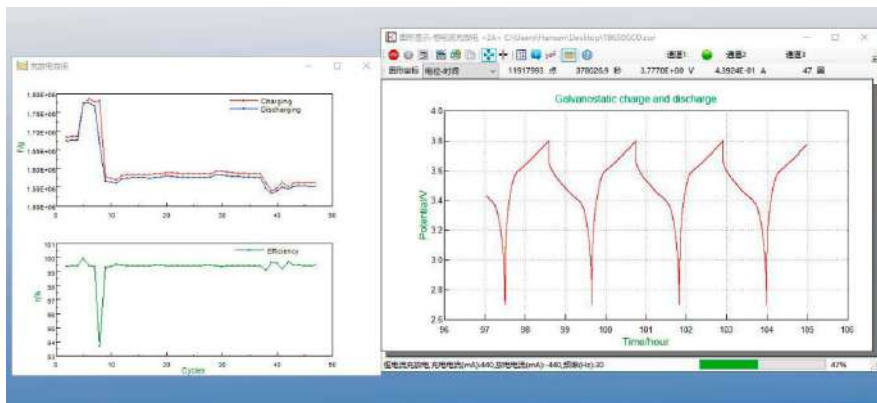
Tafel plot

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 analysis

Charge & discharge efficiency, capacity, specific capacitance, charge & discharge energy.

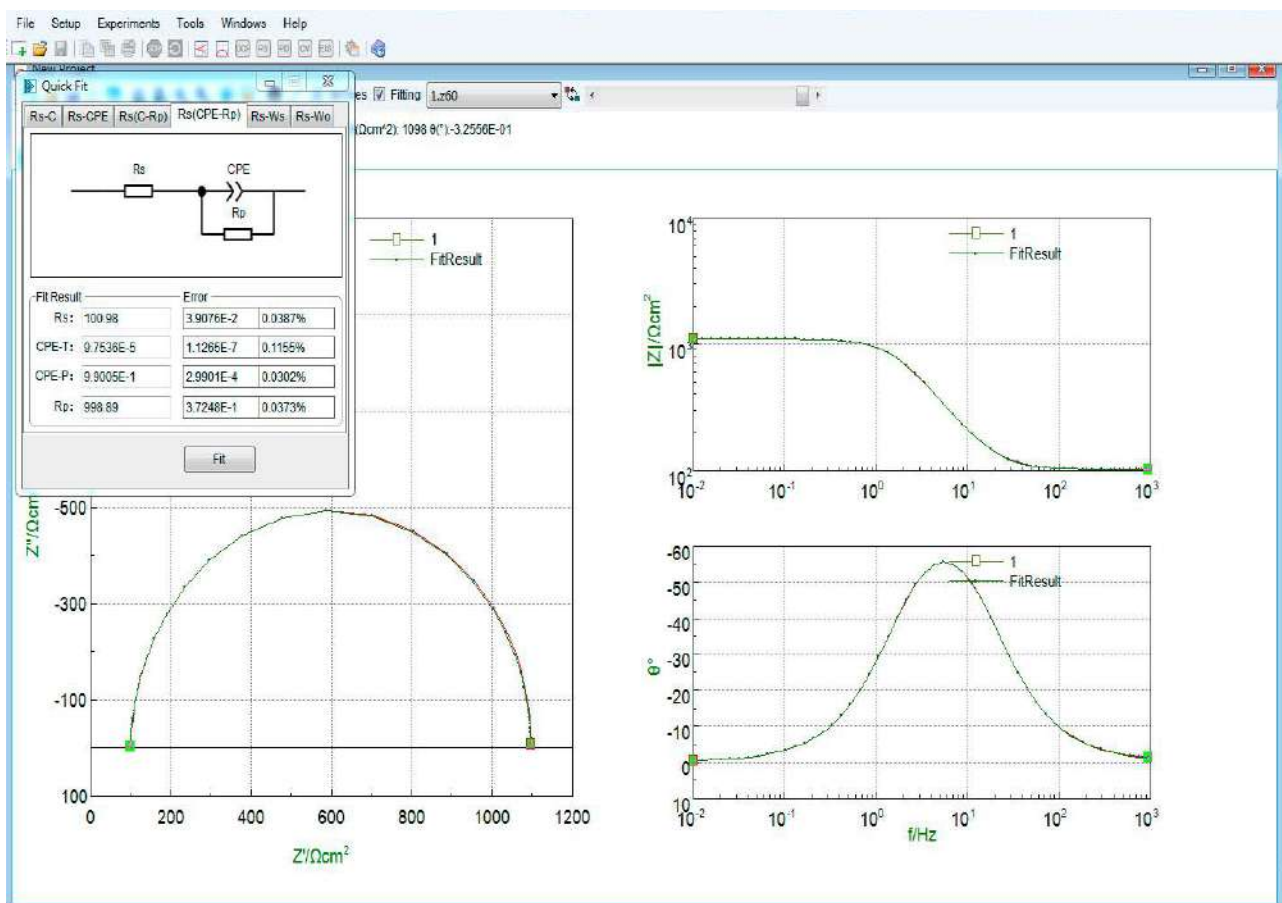


EIS analysis:

Bode, Nyquist, Mott-Schottky plot.

During EIS data analysis, there is built-in fitting function to draw the custom equivalent circuit.

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.

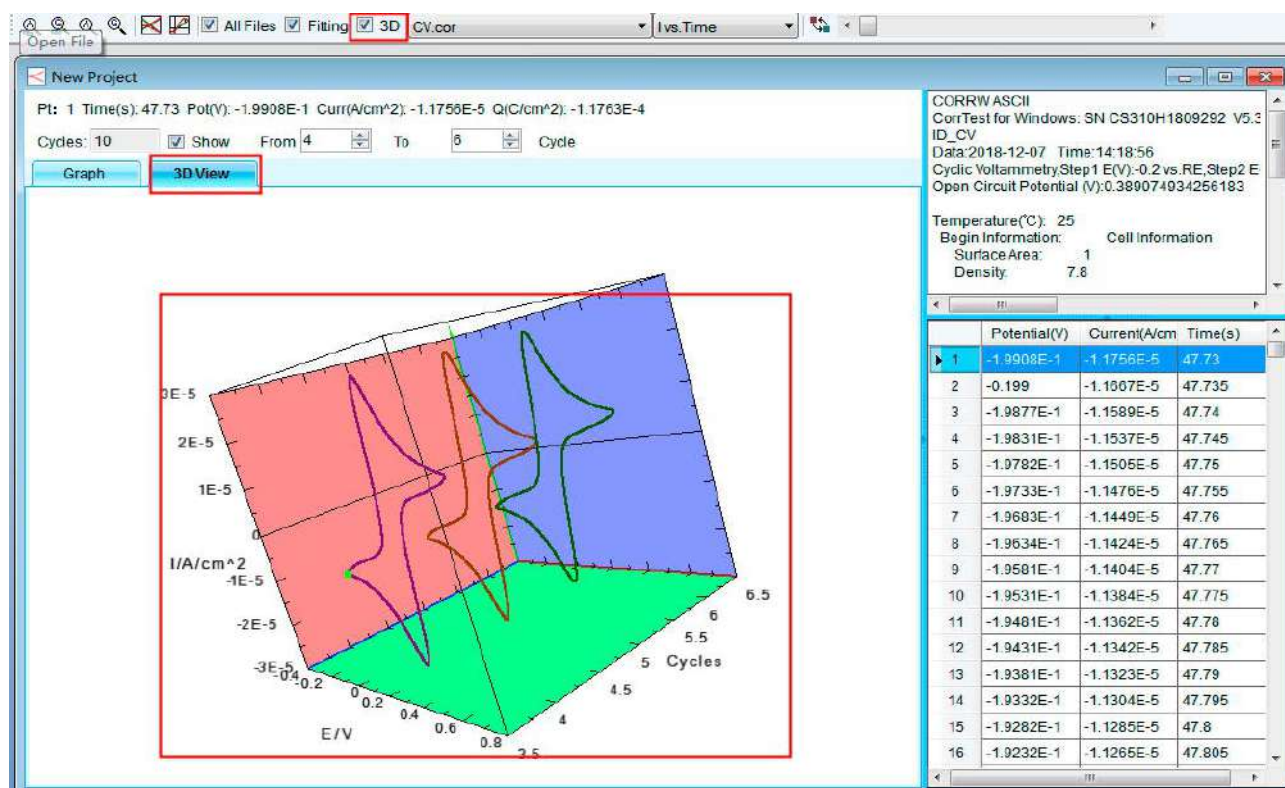


Combination test

CS studio kit has a built-in versatile timing policy for combined measurements, which 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.

No.	Name	Description	File
1	Start the cycle	Cycles:10	
2	Open Circuit Pot...	Freq(Hz):5, Hold Time(s):200	C:\Users\Administrat
3	Wait	After 60 seconds, testing will be continued	
4	EIS vs Frequency	DC Potential(V):0, Amplitude(mV):10, Initial Frequency:100000, Final Frequency:0....	C:\Users\Administrat
5	Wait	After 60 seconds, testing will be continued	
6	Potentiodynamic	Init E(V):-0.1 vs OCP, Final E(V):0.1 vs OCP, Scan Rate(mV/s):0.5, Freq(Hz):1	C:\Users\Administrat
7	End the cycle	End	

3D plot



Indicar o identificar figura, si procede

Specifications

Specifications	
Support 2-, 3- or 4-electrode system	Potential and current range: Automatic
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: $<1\mu S$ ($<10mA$), $<10\mu S$ ($<2A$)	Reference electrode input impedance: 1012Ω $20pF$
Current range: $2nA \sim 2A$, 10 ranges	Compliance voltage: $\pm 21V$
Maximum current output: $2A$	CV and LSV scan rate: $0.001mV \sim 10,000V/s$
CA and CC pulse width: $0.0001 \sim 65,000s$	Current increment during scan: $1mA @ 1A/ms$
Potential increment during scan: $0.076mV @ 1V/ms$	SWV frequency: $0.001 \sim 100 kHz$
DPV and NPV pulse width: $0.0001 \sim 1000s$	AD data acquisition: $16bit @ 1 MHz$, $20bit @ 1 kHz$
DA Resolution: $16bit$, setup time: $1\mu s$	Minimum potential increment in CV: $0.075mV$
IMP frequency: $10\mu Hz \sim 1MHz$	Low-pass filters: covering 8-decade
Operating System: Windows 2000/NT/XP/ 7/8/10	Interface: USB 2.0
Weight / Measurements: $6.5kg$, $36.5 \times 30.5 \times 16 cm$	
EIS (Electrochemical Impedance Spectroscopy)	
Signal generator	
Frequency range: $10\mu Hz \sim 1MHz$	AC amplitude: $1mV \sim 2500mV$
DC Bias: $-10 \sim +10V$	Output impedance: 50Ω
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: 106 cycles or $105s$
Measurement delay: $0 \sim 105s$	
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/Methods

Model CS350

Stable polarization

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

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)
- ▶ 2nd 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

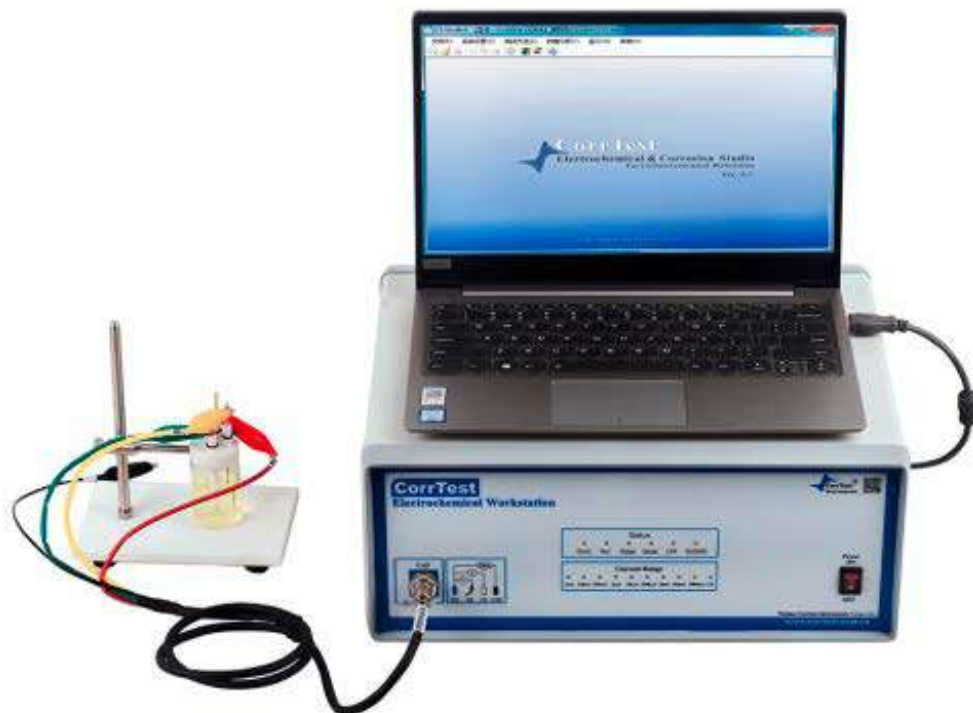
- ▶ Cyclic polarization curve (CPP)
- ▶ Linear polarization curve (LPR)
- ▶ Electrochemical Potentiokinetic Reactivation (EPR)
- ▶ Electrochemical Noise (EN)
- ▶ Zero resistance Ammeter (ZRA)

Battery test

- ▶ Battery Charge and Discharge
- ▶ Galvanostatic Charge and Discharge (GCD)
- ▶ Potentiostatic Charging and Discharging (PCD)
- ▶ Potentiostatic Intermittent Titration Technique (PITT)
- ▶ Galvanostatic Intermittent Titration Technique (GITT)

Extensions

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



Model CS310 - with EIS

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

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 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.

Model CS300 - No EIS

Model CS300 doesn't include EIS. It includes all the voltammetric methods (CV, LSV, DPV, NPV, SWV, ACV, DNPV and voltammetry stripping) and some other techniques. It's especially suitable for electro-analysis areas such as heavy metal ions concentration inspection.

Model CS150 - No EIS

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

Model CS150 is a cost-effective and entry 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		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-V)	√	√	√	√
	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)	√	√	√	√



Bipotentiostat Model CS2150

- Support 2-, 3- or 4-electrode system.
- Two independent channels for simultaneous measurements and RRDE.
- Potential control range: $\pm 10V$, Maximum Current: $\pm 2A$, Compliance voltage: $\pm 21V$.
- EIS Frequency range: $10\mu Hz \sim 1MHz$ (Optional).

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).

The experiment can be conducted at the same time in each channel (RE1, CE1, WE1 & RE2, CE2, WE2). Corrtest bipotentiostat is the real double-channel potentiostat. It uses Ethernet connection and supports floating and grounded mode. CS2150 equals to two sets of single-channel potentiostat in one instrument.

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

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
- ▶ 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)

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 Eletrolysis with Coulometry (BE)
- ▶ Rs Measurement

****Option:**

EIS

EIS vs Frequency (IMP).

EIS vs Time (IMPT).

EIS vs Potential (IMPE).

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.

Bipotentiostat Model CS2350

There are two independent channels. 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 but no EIS.

One channel equals to single-channel model CS350, the other equals to CS150.

Multichannel potentiostat

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. It supports floating mode, and uses Ethernet connection. Each channel is completely independent. 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.

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	$10\mu\text{Hz} \sim 1\text{MHz}(\text{Optional})$

Techniques

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), 2nd harmonic AC Voltammetry (SHACV), Fourier Transform AC Voltammetry (FTACV)

Stripping Voltammetry

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

Amperometric

- 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 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 (PCD), Potentiostatic Intermittent Titration Technique (PITT), Galvanostatic Intermittent Titration Technique (GITT)

Extensions

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

Advantages

High current/voltage

Maximum Current is $\pm 500\text{mA}$. Applied potential range $\pm 10\text{V}$. It can meet the needs of studies needing high current or low current.

Comprehensive functions

There are more than 40 techniques for various studies.

EIS ($10\mu\text{Hz}$ ~ 1MHz) 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

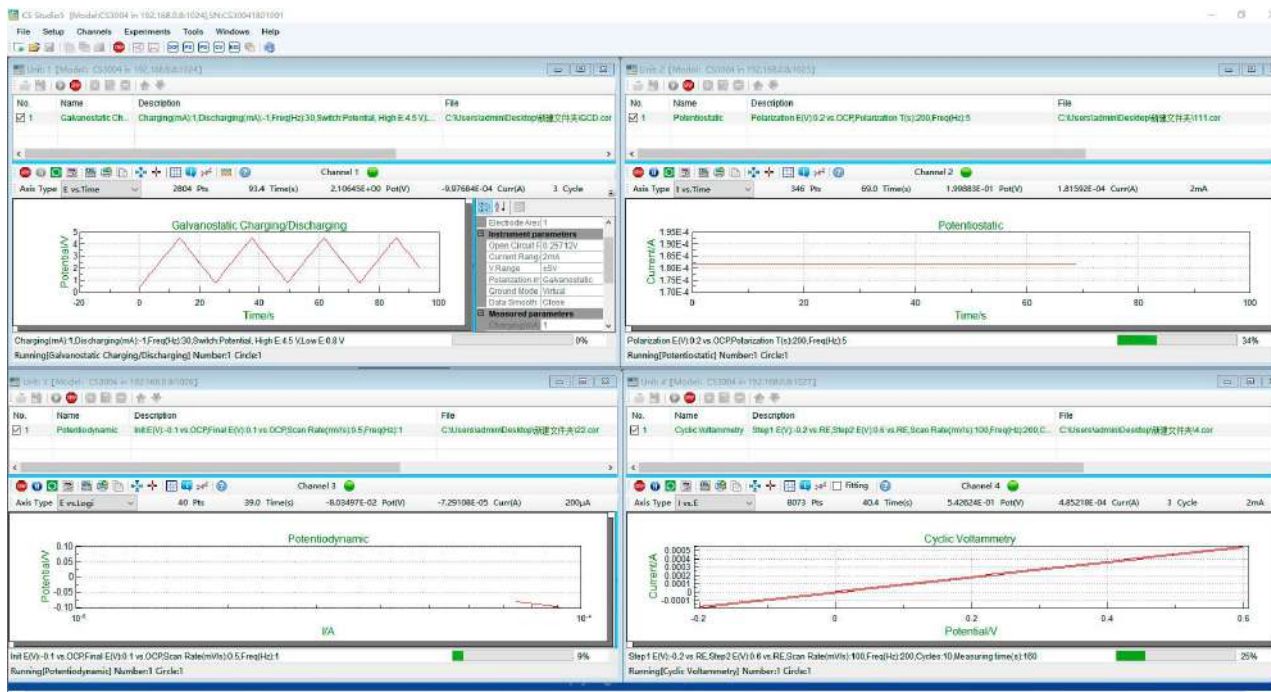
The price includes instrument host, software, necessary cables, dummy cell.

Reliability & Quality

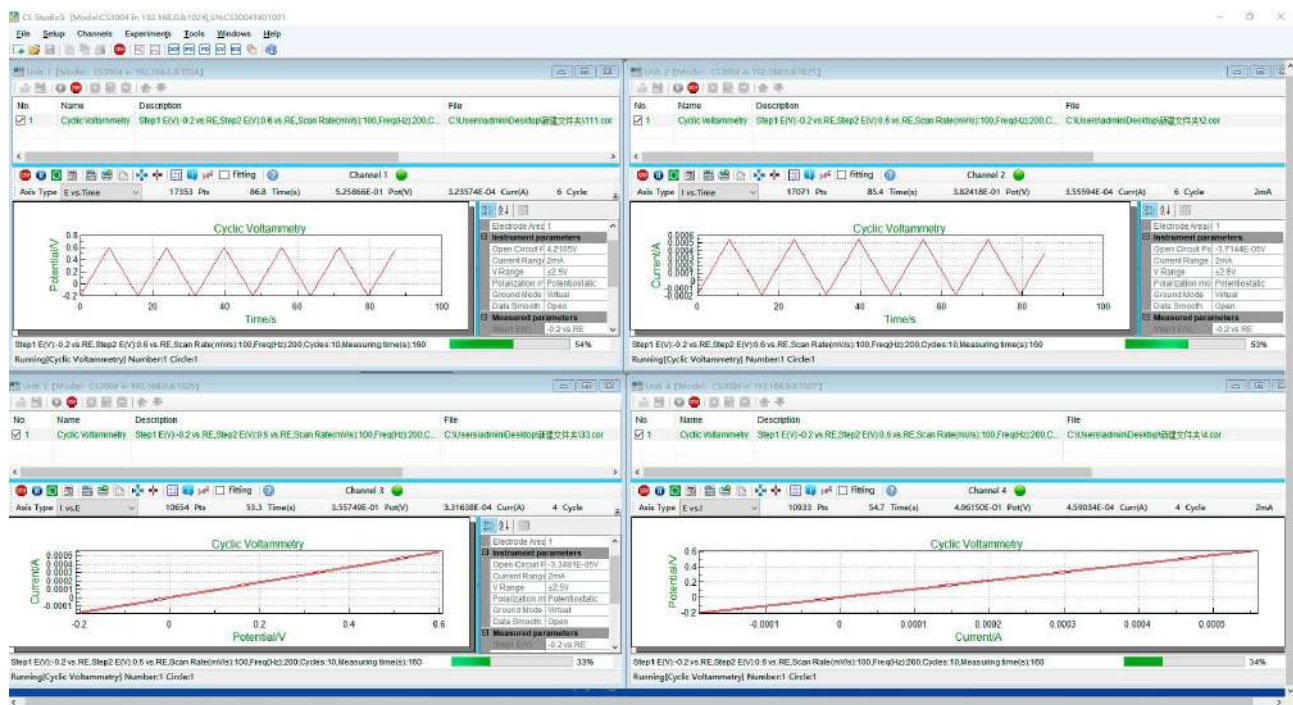
We've been in the market for 20 years, and now is the No. 1 brand of potentiostat product in China

Simultaneous measurements

In below picture, for instance, the four channels are running galvanostatic charge and discharge, potentiostatic, Potentiodynamic, and CV, simultaneously in one window.



In below picture, the four channels are running same experiment: CV simultaneously in one window.



8 Channel potentiostat

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



32 Channels potentiostat Model CS3132





Pocket potentiostat Model CS100

- 140*80*25mm, 220g
- Easy-to-use software
- Incl. all voltammetric techniques
- Connected and powered by USB cable

Applications

- Battery materials performance tests.
- Heavy metal ions concentration testing, water analysis
- Small current measurement in bio-sensor
- Components testing in food, drugs field etc.

Key Specifications

Potential range	±10V
Maximum current	±20mA
Compliance voltage	±11V
Potential range	auto, ±2.5V, ±5V, ±10V
Potential resolution	0.1% × potential range
Potential control accuracy	0.1% × full range
Current range	±2nA~±20mA, 8 ranges
Measured current resolution	0.1% of current range, lowest 100fA

Techniques

Open Circuit Potential (OCP), Potentiostatic (i-t curve), Potentiodynamic (Tafel), CV, LSV, SCV, SWV, DPV, NPV, DNPV, Linear sweep Stripping, Staircase Stripping, SWV Stripping, DPV Stripping, NPV Stripping, DNPV Stripping, Differential Pulse Amperometry (DPA), DDPA, Electrochemical Noise (EN).



CORRTEST

Instruments

ACCESORIOS

Instrumentación electroquímica

Ayscom dataTec presenta los accesorios de Corrtest.



REFERENCE ELECTRODE

CS900 Saturated calomel electrode (SCE)



Saturated KCl refilling solution.
Please take the black cap at the end during use.

CS903 Mercury/Mercurous sulfate electrode



Suitable in acid solution.
Saturated K₂SO₄ refilling solution.

CS901 Ag/AgCl reference electrode



3.5M KCl refilling solution.
Glass part: $\varnothing$ 4mm / 6mm.

CS904 Cu/CuSO₄ electrode



Saturated CuSO₄ refilling solution.

CS902 Hg/HgO reference electrode



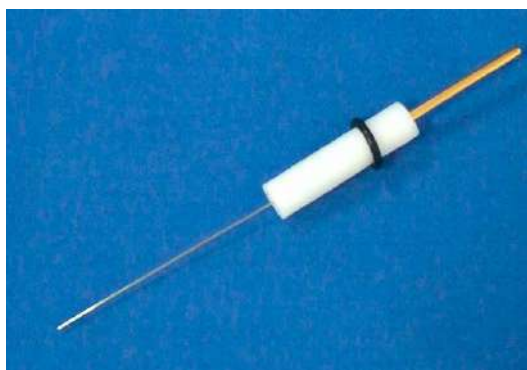
Suitable for alkaline/base solution.
1M KOH refilling solution.

CS905 Non-aqueous Ag/Ag⁺ reference electrode



Suitable in organic solution .
 $\varnothing$ $\varnothing$ 4mm/ $\varnothing$ 6mm.

CS912 Platinum wire counter electrode



φ 0.5x37mm (wire).

CS911 Platinum plate electrode



Size can be customized:

99.95%, 10x10x0.1mm / x0.2mm

99.95%, 20x20x0.1mm / x0.2mm

99.95%, 20x20x0.3mm

CS910 Platinum conductivity electrode



This electrode is big, suitable for CS930.

4-neck cell for corrosion study.

Diameter is 12mm

CS913 Platinum mesh electrode



Size:

10*10mm

20*20mm

CS915 Graphite rod



φ 4mm*150mm

φ 6mm*150mm

CS916 Graphite electrode



**The price is for one electrode.

φ2~φ 5mm available.

CS920 Glassy carbon working Electrode



Inner disc diameter:

$\varnothing$ 3mm / $\varnothing$ 2mm / $\varnothing$ 4mm/5mm / $\varnothing$ 6mm

CS922 Platinum working electrode



Inner disc diameter:

$\varnothing$ 2mm / $\varnothing$ 3mm

CS923 Gold working electrode



Inner disc diameter:

$\varnothing$ 2mm / $\varnothing$ 3mm

CS924 Other metal disk working electrode



Metal	Diameter
Silver , Titanium, Copper, Aluminum, Zinc, Iron, Palladium	$\varnothing$ 2mm / 3mm

CS921 Corrosion Metal Electrode

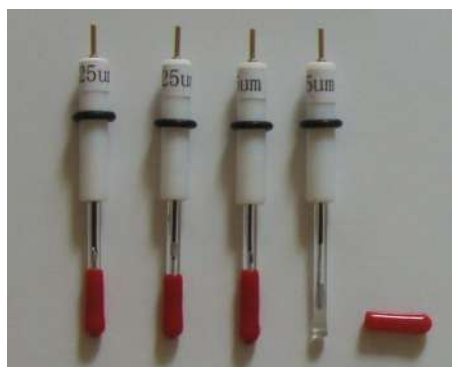


Working area: 0.5cm²

Carbon steel, stainless steel, copper, etc.

The material can be customized as you request.

Micro electrode



CS925 Pt micro electrode 10μm/25μm

CS926 Gold micro electrode

12.5μm/25μm

PINE RRDE & RDE

CS927 PINE RRDE



Glassy carbon disk, Pt ring electrode.
Compatible to PINE's RRDE equipment.

PINE RDE- Glassy carbon disk electrode



3mm/4mm/5mm.
Electrode is internal-screw type.
Compatible to PINE's RDE equipment.
Pt/Au disk electrode also available.
Pt/Au disk electrode also available.

PINE RDE- Electrode is external-screw type



Compatible to PINE's RDE equipment with internal-screw rod.

ALS RRDE & RDE

ALS RRDE-3A equipment ALS RRDE



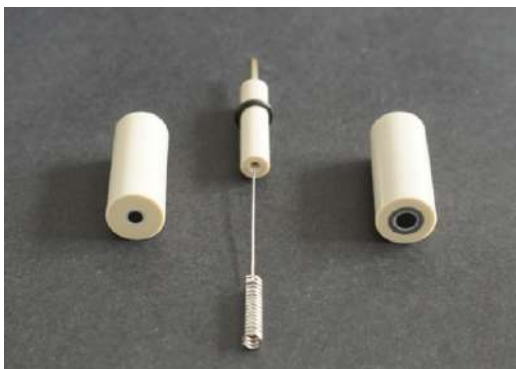
Glassy carbon disk working electrode OD of ring electrode 7mm, Inner diameter 5mm; disk diameter 4mm, Insulator diameter 12mm, length 25mm.

ALS RDE



Glassy carbon disk electrode.
Disk diameter 3mm.
Insulator diameter 12mm, length 25mm.

ALS Pt Wire counter electrode



Platinum counter electrode.
 $\varnothing$ 0.5*230mm.

ELECTROCHEMICAL CELLS – CORROSION CELL

CS9305 Multi Port Corrosion Cell

It is also called “polarization cell” which is specially designed for corrosion measurements.

Standard cell 5 ports, 500mL

The cell includes:

- Specimen holder (effective working area 1cm²)* 1
- Graphite rods *2
- Platinum plate electrode (10*10*0.1mm)*2
- Saturated calomel electrode *1
- Salt bridge*1
- F-shape gas inlet & outlet*1

You just need to prepare a round specimen to install in the specimen holder.

The cell can be used for one or two counter electrode system.

The distance between reference electrode and working electrode is very small.

Another port can be added/ tailored to make it to be a 6-port cell.



CS930 Glass electrolytic Cell

This is the simple ordinary 4-port cell for corrosion study.

Salt bridge and gas inlet/outlet pipe come with the cell.

Rubber stoppers are used to stabilize the electrodes.

Volume:

150ml / 250ml / 500ml / 1000ml

We can also supply 5-port cell of this type.

Usually, CS900 RE, CS921 WE, CS910 CE (shown below in order) are used with this cell.



CS936 None-Jacketed Flat corrosion cell

Effective working area is 1cm²

Include:

Ag/AgCl reference electrode*1

Built-in counter electrode: Pt mesh*1 (20*20mm)



CS936 Jacketed Flat corrosion cell

Jacketed, water circulation for temperature control.

Effective working area is 1cm².

Include

Ag/AgCl reference electrode *1

Built-in counter electrode: Pt mesh *1 (20*20mm).



CS934 Paint Test Cell Also called "coating evaluation cell"

It's a low-cost sample cell for electrochemical testing of coated samples.

10ml

Effective working area is 1cm²

Comes with a Ag/AgCl RE (CS901) and a Graphite rod (CS915)

A specimen sheet is installed between the cell hole and the big Teflon stand.



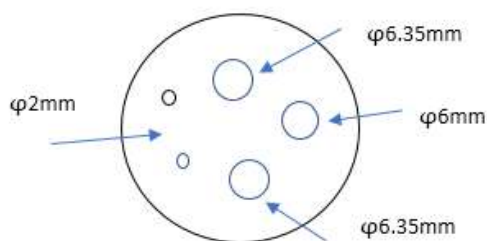
ELECTROCHEMICAL CELLS -VOLTAMMETRY CELL

CS941 Cell stand

Stand material: PTFE.

Provide 2 pieces cells (30ml).

Holes on the cap are fixed size. Fitting electrodes of 6mm/6.35mm outer diameter.



Usually, Ag/AgCl RE(CS901) Pt wire CE(CS912), Glassy carbon WE (CS920) are used with this cell kit.



CS935S Seal electrochemical cell

Electrodes are not included.

2 gas pipes are included.

The sealing screws & O-rings ensure the sealing.

The holes on the Teflon lid are tailored according to requirement. You just tell us which electrodes will be inserted.

Volume:

50ml / 100ml / 150ml / 250ml



CS935 None-sealed cell

Electrodes are not included.

The holes on the Teflon lid are tailored according to requirement. You just tell us which electrodes will be inserted.

Volume:

150ml / 200ml / 250ml



ELECTROCHEMICAL CELLS – CELL VIALS

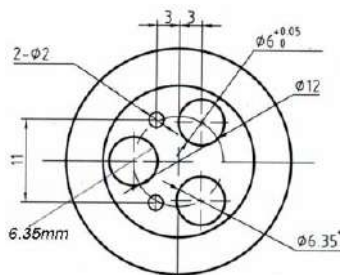
CS937 Glass cell + Teflon cap

Glass cell: 10ml

Diameter of the three holes: ϕ 6.35mm, ϕ 6.35mm, ϕ 6mm

Holes on the cap are fixed size. Fitting 6mm/6.35mm OD electrode.

Holes on the cap are fixed size.
Fitting 6mm/6.35mm OD electrode.
This cell is not the replacement for CS941 cell stand. This cell has no side hole, and is 10ml.



ELECTROCHEMICAL CELLS – JACKETED CELL

The temperature of the testing system can be controlled by the circulating water bath.

CS931S Sealed Jacketed glass cell

The sealing screws & O-rings ensure the sealing
The holes on the Teflon lid are tailored according to requirement. You just tell us which electrodes will be inserted.

Volume:

50ml / 100ml / 150ml



CS931 None-sealed Jacketed glass cell

The holes on the Teflon lid are tailored according to requirement.

You just tell us which electrodes will be inserted.

Volume:

50ml / 100ml / 150ml



ELECTROCHEMICAL CELLS - H-CELLS

CS932-S Sealed H-cells (sealed)

Volume: 50~250mL (each cell).

The sealing screws & O-rings ensure the sealing. The holes on the Teflon lids can be tailored according to requirement. You just tell us which electrodes will be inserted.

CS932-2 H-cells (non-sealed)

The holes on the Teflon lids can be tailored according to requirement. You just tell us which electrodes will be inserted.



PHOTOELECTROCHEMICAL CELL

CS9330 Quartz Cell

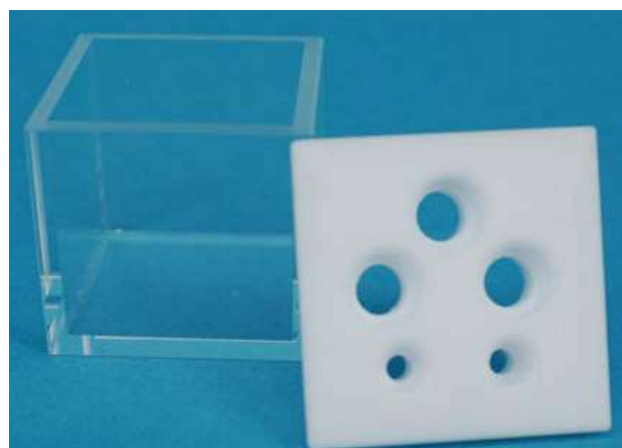
Made of quartz. The holes on the Teflon cap can be tailored. Just tell us which electrodes to be inserted.

Size:

30*30*30mm

40*40*40mm

50*50*50mm



CS9331 Photoelectrochemical cell

*Glass cell, Teflon cap, Quartz light window (dia. 24mm). One extra quartz for replacement.

*Holes on the cap can be tailored according to electrodes to be inserted.

*For working electrode, you're recommended to use L-shape electrodes, or the specimen clamp.

Volume:

50ml / 100ml / 150ml



SPECTROELECTROCHEMICAL CELL (CUVETTE CELL KIT)

CS9330 Spectroelectrochemical Cell

Optical path length: 8*6.5*1mm

Quartz cuvette size: 12.5*12.5*42mm

Teflon cap.

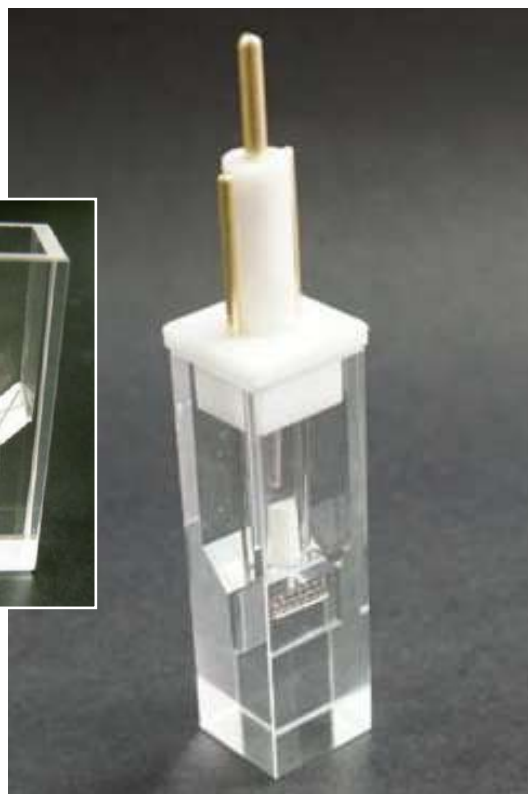
This cell kit includes:

Pt mesh (WE)*1

Pt wire counter electrode (CE)*1

Ag/AgCl reference electrode

Purge tube*2



FARADAY CAGE

CS943 Faraday cage

Dimensions: 25*25*30cm



ELECTRODE POLISHING KIT

CS942 Electrode polishing kit

- ▶ 0.05µm Alpha alumina powder 10g
- ▶ 0.3µm Alpha alumina powder 10g
- ▶ 1µm Alpha alumina powder 10g
- ▶ Nylon polishing pad (Ø200mm) *1
- ▶ Microcloth polishing pad (Ø200mm)*1
- ▶ Carbimet disks (1200-4000 grit, Ø200mm)*1
- ▶ Glass plate*2



SPECIMEN HOLDER

CS946 Specimen holder

Round specimen can be installed in this holder.

The effective working area is 1cm².

PVDF rod diameter 10mm, length 100mm.

Specimen dia. 11.5-15mm, thickness 0.1-5mm.

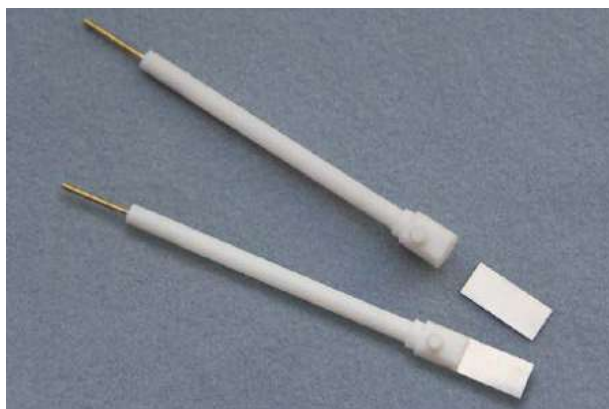


CS945 Specimen clamp

Plate specimen can be installed in this clamp.

Diameter of the Teflon rod: 6mm.

Suitable for plate specimen with thickness:
< 1mm.



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