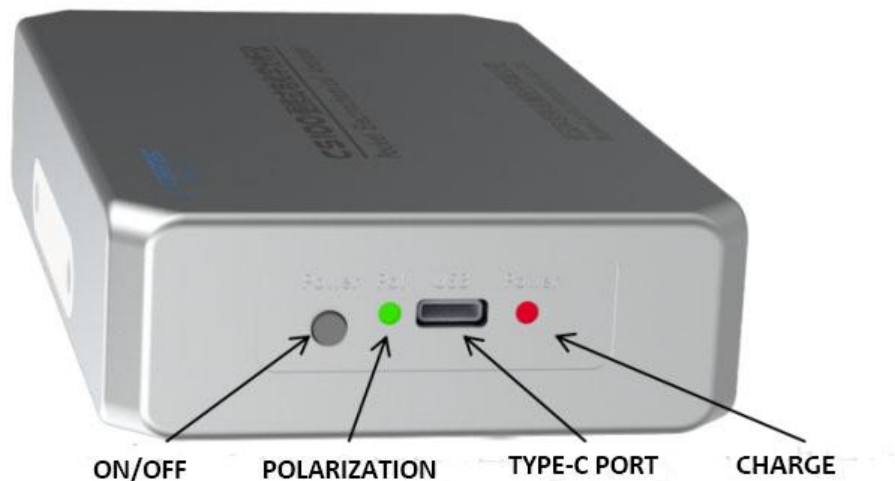


Portable potentiostat model CS100



The CS100 is internally powered by a lithium battery, which can be placed in a glove box or used outdoors. The lithium battery can be charged in advance, and the Type-C interface is used for charging and communication. The circuit adopts a floating-ground design, and the electrochemical parameters of the grounding system can be measured without an isolation transformer.

CS100 portable potentiostat is mainly used for battery testing, electroanalytical chemistry, and corrosion electrochemical testing. The voltage control range is $\pm 10\text{V}$, compliance voltage is $\pm 12\text{V}$, the current output range is $\pm 45\text{mA}$, and the minimum current resolution can reach 100fA .

Applications

- The small and convenient potentiostat can be used for performance testing of battery materials in the glove box;
- Ultra-low detection limit of heavy metal ions, suitable for water quality testing in environmental protection;
- High current accuracy, suitable for small current detection in biosensor;
- Comprehensive functions, can be used for the active ingredient detection in food and drug field;
- Easy to carry, suitable for bridge corrosion and soil corrosion measurements

Features

- 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



Overview

The CS100 portable potentiostat is composed of DDS digital signal synthesizer, constant potential control, dual-channel high-speed 16bit/high-precision 24bit AD converter. The built-in DDS and dual-channel signal correlation integral circuit improves the measurement accuracy of AC impedance. The EIS frequency range is 10 μ Hz~1MHz (CS100E with EIS). It can automatically perform electrochemical impedance test under open circuit potential or any DC bias voltage. Built-in DC offset compensation circuit can effectively improve the measurement accuracy of AC signals. The amplitude of the exciting sine wave can be set between 0 ~ \pm 2.5V. The EIS data format is compatible with ZView, and ZView can be directly used for impedance spectrum analysis. CS100 potentiostat can also output sine wave, square wave, triangle wave, sawtooth wave, pulse wave, etc., and the output frequency is 0~100KHz.

The command control and data analysis of the CS100 portable potentiostat are realized through the CS Studio software. The software has multi-coordinate graphic display and zooming, data/graphic storage/printing, and interactive help. The software has techniques for materials and corrosion electrochemistry, including automatic or manual reverse sweep of passivation curve, electrochemical reactivation method, solution resistance (IR drop)

measurement and compensation.

CS Studio software also has a complete data analysis function, which can achieve the volt-ampere curve smoothing, the peak height and area integration, and the electrochemical parameters analysis of the polarization curve, including polarization resistance R_p , Tafel slope b_a , b_c , and corrosion current density i_{corr} , corrosion rate calculation, etc., noise resistance R_n and power spectrum can also be calculated, and the graph can be copied to other files in vector mode.

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: $\pm 12V$

Potential accuracy: $0.1\% \times$ full range

Minimum potential resolution: $10\mu V$

Current accuracy: $0.1\% \times$ full range

Minimum current resolution: $100fA$

Potential range: 3 ($\pm 2.5V$, $\pm 5V$, $\pm 10V$)

Current range: $200pA \sim 50mA$, 10 ranges

($200pA$, $2nA$, $20nA$, $200nA$, $2\mu A$, $20\mu A$, $200\mu A$, $2mA$, $20mA$, $50mA$)

Reference electrode input impedance: $10^{13}\Omega || 8pF$

EIS frequency range: $10\mu Hz \sim 1MHz$ (CS100E)

AC amplitude: $0 \sim \pm 2.5V$

Signal response bandwidth: $1MHz$

Max. acquisition rate: $150,000$ data points/s

CV and LSVscan rate: $0.001mV \sim 10V/s$

Electrochemical techniques

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) (in CS100E only)

- 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

Supply list

portable potentiostatCS100(E) *1

Software *1

USB cable *1

Cell cable *2

Dummy cell *1

Service

1. Warranty period: 5 years. During this period, all service including repair is **TOTALLY FREE.**
2. Provide installation guidance and manual.
3. Lifetime free software upgrading (of the same model) and technical service