

TECHNICAL SPECIFICATIONS FOR ELECTROCHEMICAL WORK STATION WITH LOW CURRENT DEVICE

Modular Potentiostat / Galvanostat supplied with cell cable, USB cable, Windows based software, license and a getting started manual.

Note: Vendor should be an authorized provider of sophisticated high-precision potentiostat/galvanostat systems for past 15 Years or more with:

- A proven track record in multiple countries and national institutes
- Standard quality certifications such (ISO 9001)
- 10+ past installations of similar systems in India

Specifications of Electrochemical Workstation

A Display Panel on potentiostat / galvanostat hardware must be available for real-time check on currents, voltage and OCP during or before acquisition without triggering software

Compliance voltage: ± 30 V at ± 2 A or more

Maximum Output Current: ± 2 A at ± 30 V or more

Output Voltage Range: ± 10 V or more

Current Ranges smallest current range: ± 10 nA to current range 1A in nine ranges

Resolution of applied potential: 160 μ V or better

Resolution of measured potential: 0.3 μ V or better

Accuracy of applied current: ± 0.2 % of the current range or better

Measured current resolution: 30 fA on 10 nA full scale range or better

Potentiostat Rise/fall Time: 250 ns or lower

Gain bandwidth range of amplifier: 1 MHz or more

Bandwidth of electrometer: > 4 MHz or better

Interface: USB interface for connection with PC

Input bias current: < 1 pA

Input impedance of electrometer: $> 10^9$ Ohm // 8 pF

Input ac amplitude: 0.5 mV to 300 mV rms or better

Low Current Amplification: 1 NO.

Our research requires measurement of extremely low currents at the best possible accuracy and resolution. The system quoted should have an option that provides additional low current ranges such as 1 nA or 100 pA to immediately trigger and allow a minimum current resolution of 300 aA or better.

Electrochemical Cell Set-up 50 milliliter volume of aqueous or non-aqueous electrolyte: 1 NO.

Glassy carbon disc 2mm Working Electrode – 2 nos.

Gold working electrode 2 mm disk - 1 No.

Metal Wire Auxillary Electrode - Platinum (99.9%) – 1 no.

Silver / silver chloride Reference Electrode – 2 nos.

Electrode Polishing Kit- 1 No.

Software The Software to be provided with the Potentiostat / Galvanostat should be comprehensive, fully windows based with three-dimensional view of graphics and analysis software. Software should record current, voltage and time for cyclic and linear sweep voltammetric measurement. It should be possible to record current, voltage and time data in tabular format for each measuring point in voltammogram. Software should be capable of supporting a wide variety of electrochemical techniques as mentioned below.

- Electrochemical Software for Multichannel Workstation
- Electrochemical Frequency Modulation technique for Corrosion
- Software Development Kit to control the workstation using Labview Software
- Linear Polarization, ECN, Critical pitting, EIS, Hydrogen Permeation, EFM, SECM, etc. for corrosion analysis
- I-V, IMPS, IMVS, PEC, IPCE, EQE, Mott-Schottky, EIS ---- Solar Cell Measurements
- Chrono-amperometry, chrono-coulometry and chrono-potentiometry ($\Delta t > 1$ ms), Cyclic & Linear Sweep Voltammetry – HER, OER, Kotecky –Levich based default protocols
- It should have facility to display up to 10 or more plots simultaneously
- Each plot should be saved as a vector image file to use directly in paper or presentation
- Software should have facility to record additional signal viz EQCM, bi-potentiostat etc.
- Import/export ASCII, Ready-to-use Vis & Generic interface for .Net applications should be included.

Computer:

- Compatible branded PC with i5 configuration, Color Printer should be quoted.
- CPU Intel Core i5, RAM 8 GB RAM, HDD 500 GB, GPU DirectX 9.0c compliant display adapter with 1GB RAM, TFT Monitor 22 inch, 101 Keys Keyboard, Optical Mouse, 3 USB Ports.
- 1KVA online UPS