



SIC824B

Potentiostat Sensor Module

REV 0.1

Features Summary

SIC824B is a Portable Potentiostat module with Bluetooth® 5.2 designed for electrochemical measurement sensor. The module has 3 channels – Reference Electrode (RE), Counter Electrode (CE), Working Electrode (WE). The module is powered by battery.

Potentiostat

- Electrode Connection
 - 3-electrode system: 1xWE, 1xRE, 1xCE
- Biasing Potential
 - Selectable ranges
 - -1.6V to 0V
 - -0.8V to +0.8V
 - 0V to +1.6V
 - Resolution: 5 mV/step
- Current Input Range
 - Customized by hardware fix. (maximum $\pm 500 \mu\text{A}$)
- Data Conversion
 - Minimum sampling period 20 ms
 - Resolution: up to 16-bit
 - Accuracy: $\pm 0.1\%$ of current range
- Compatible Analysis Techniques
 - Open Circuit Potential (OCP)
 - Voltammetry
 - Amperometry
 - Compliance voltage ± 2.2 to $\pm 3\text{V}$ (VWE - VCE)

Components

- Voltammetry controller
- Regulator
- Voltage Reference
- 8-Bit DACs
- 12-bit ADC up to 16-bit with hardware over sampling

Connectivity

- RF interface based on 2.4 GHz Bluetooth® 5.2 specification, IEEE 802.15.4-2011

Memory

- 1 MB flash memory
 - 616 KB reserved memory for operation
 - 8 KB reserved memory for calibration
 - 376 KB free space for user memory

Operating Conditions

- 3.7V power supply (rechargeable battery)
- Operating temperature 0 to 50°C
- Storage temperature -20 to 60°C

Module Information

- 320 mAh rechargeable battery
- LED status: Bluetooth connection, Measurement stage, Battery level
- Delivery form: PCB size 81 mm x 35 mm x 1.6 mm (10 mm total thickness including components and battery)
- Connector Adapter
 - CN3: 2.54 mm pitch, maximum recommended electrode thickness is 0.3 mm

Screen-Printed Electrode (SPE)

- 3 Electrodes Including:
 - Working Electrode: Graphene (Size: Diameter 3 mm)
 - Counter Electrode: Graphene
 - Reference Electrode: Ag/AgCl

Applications

- Chemical sensor
- Biochemical Sensor
- Potentiometric Sensor

Development Kit Support Material

- Demo iOS/android application
- Reference PCB design and schematic diagram
- Reference antenna and antenna design tool