



Southern Illinois University System

Applications

- Electrochemical analysis
- Power supply monitoring

Inventors

Bradley Noble, DSc

Dr. Noble is an associate professor of electrical and computer engineering at SIU Edwardsville.

Michael Shaw, PhD

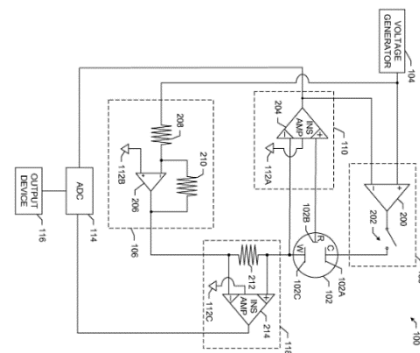
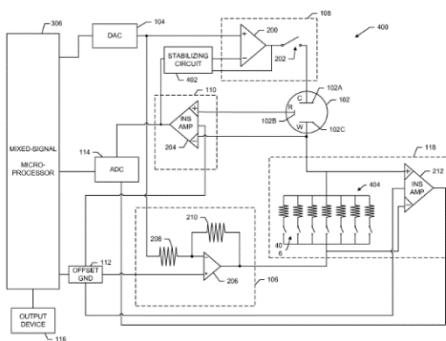
Dr. Shaw is a professor of inorganic chemistry at SIU Edwardsville.

Digital Potentiostat Circuit and System

Potentiostats are common tools used in electrochemical analysis. Currently, a number of companies manufacture potentiostats that deliver high precision and accuracy at a high cost. As a result, these instruments are not easily accessible for widespread use in research studies. As such, there is a need for a potentiostat that is inexpensive yet provides high precision and accuracy.

Invention

SIU researchers have developed an inexpensive potentiostat circuit for performing electrochemical analysis. The device includes a counter electrode, a working electrode and a reference electrode. The device also includes an input voltage signal by way of a voltage source or a digital-to-analog converter. A voltage feedback circuit and amplifier circuit are used to generate a control voltage signal to the counter electrode. A current measurement component measures the current level at the working electrode and generates an output measurement signal proportional to the current level measured at the working electrode. The output measurement signal indicates a change in the working voltage level electrochemical property of the solution in contact with the counter electrode, the working electrode and the reference electrode.



Key Advantages

- High precision and accuracy
- Low cost
- Minimal hardware requirements
- Can be implemented with generalized computer devices
- Potential to be used as a commercial device

Status

U.S. patent #8,845,870 was issued on September 30, 2014. The technology is available for license.

Other opportunities related to this technology, included but not limited to sponsored and/or collaborative research, may be available. Please reach out to the designated contact identified at left for more information.

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