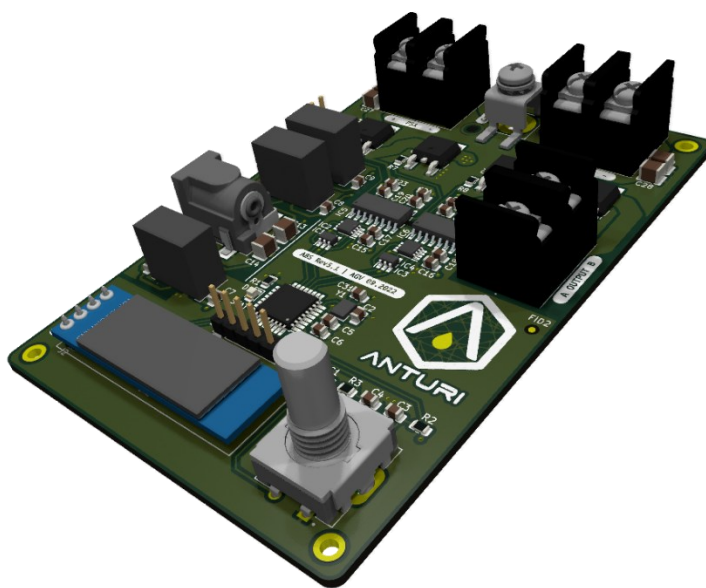




ANTURI
Industrial electrochemistry

Asymmetric Bipolar Switch

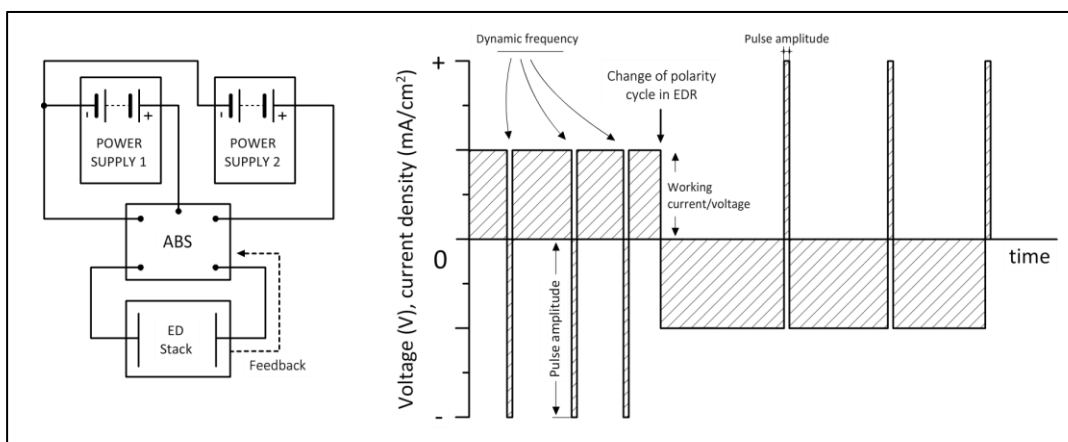
Designed for improving the performance of
electrochemical processes



ASYMMETRIC PULSES

Through electric power modulation, it is possible to control operational non-electrical parameters, such as the efficiency and production rate of electrochemical processes. Pulsed electric fields in electromembranes have consistently shown numerous beneficial results, enhancing the intensity of electrochemical reactions beyond their typical constraints.

For the integration of pulsed electric fields, specialized power supplies are required. However, a device known as Asymmetric Bipolar Switch (ABS) can be attached to standard power supplies, offering refined control over pulse amplitude, width, and frequency. The ABS enables dynamic changing of the electric field direction on the electrochemical stack or reactor. These parameters are not fixed, unlike pulse width modulation (PWM). This method is favored due to its inherent simplicity and adaptability. Furthermore, electric field modulation leads to energy conservation, enhanced operational system flexibility, increased equipment longevity, and a reduction in chemical cleaning and maintenance needs.



ABS output characteristics. The user defines the fixed voltage or current output in electrodialysis.

Pulse techniques will become a common tool in electrochemical processes, many of them have been tested under limited conditions, while others have never been studied.

Potential applications

- + Electrodialysis
- + Electrodeposition (Chandrasekar & Pushpavanam, 2008)
- + Hydrogen production
- + Electrowinning optimization
- + Electrosynthesis
- + Electrocoagulation
- + Microbial Fuel Cells
- + Flow batteries
- + Electrolysis (Rocha et al., 2021)

ABS Lab version

Specifications

- + Operating Frequency: Up to 2,000 Hz
- + Voltage Range: 0-60V
- + Current Handling Capacity: Up to 20A

The package includes

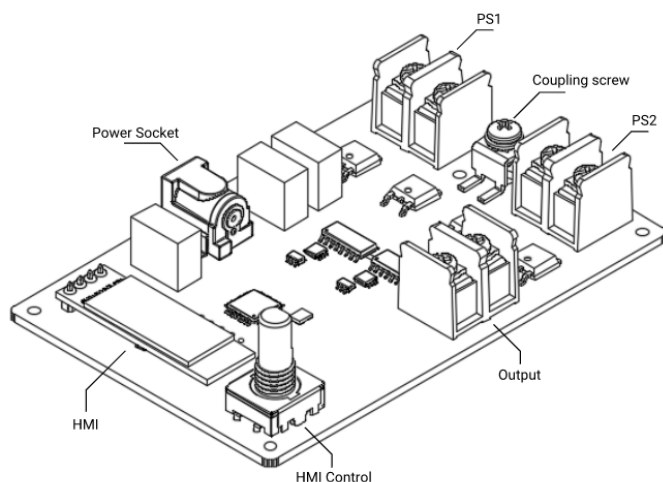
- + Input Voltage: 12 DC voltage source (power socket, Figure 1)
- + Feeding Voltage: 0-60 VDC
- + Output: Pulsed Feeding Voltages with adjustable parameters
- + Control Panel: Integrated user-friendly control panel (HMI)
- + Microcontroller: Integrated, isolated from power side
- + Dimensions: 72x100x34mm
- + Weight: 150g
- + Operating Temperature Range: 10-60°C

Dimensions:
62 x 70 x 20 mm

Weight:
40g

Lead-time:
4 weeks

The ABS is a plug-and-play device that integrates seamlessly between any power supply and electromembrane stack, providing an instant upgrade to electrochemical processes.



*Laboratory/Bench scale Asymmetric Bipolar
Switch*

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