INTERFACE 5030

Interface 5030 Potentiostat/Galvanostat/Zero-Resistance Ammeter



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The Interface™ 5030 is designed for testing of batteries, supercapacitors, and fuel cells. There are two versions available: The Interface 5030P provides capabilities for typical testing of single cells using techniques such as charge, discharge, cyclic charge/discharge, potentiostatic, galvanostatic, and galvanostatic EIS to 20 kHz. The Interface 5030E includes Gamry Instruments' full suite of electrochemical techniques and extends the impedance frequency range to 1 MHz.

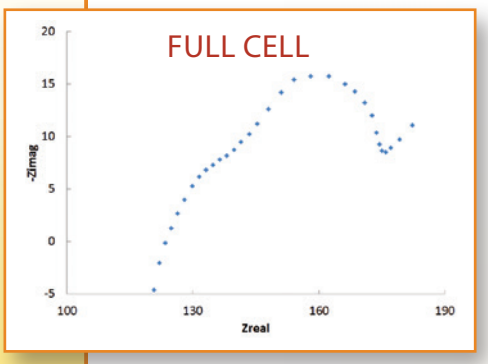
- ±5 A
- ±6 V
- EIS to 1 MHz
- Monitor both half cells simultaneously

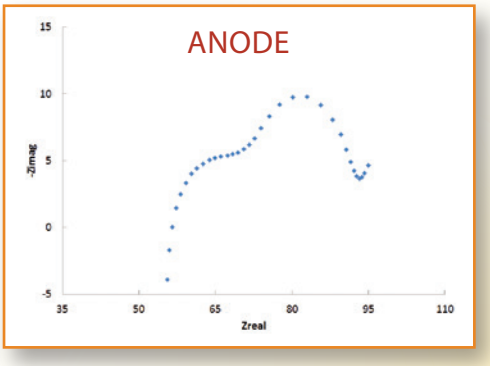
Flexible

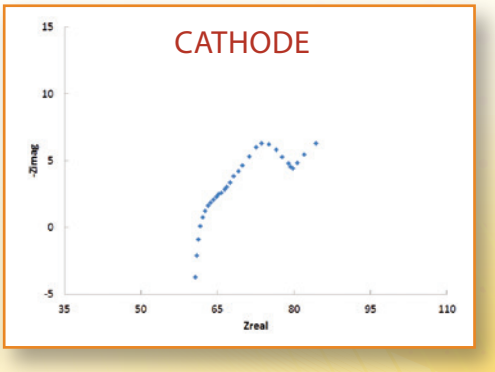
With six current ranges from 50 μA to 5 A you can characterize new materials or fully-assembled cells.

Complete Cell Characterization

Gamry Instruments gives you the ability to monitor both half-cell voltages in addition to the full-cell voltage when an embedded reference electrode is used. You can get both half cells and the whole cell characterized all in one experiment. This saves you time and lets you run more experiments.







Interface™ is a trademark of Gamry Instruments, Inc.

Low Noise

Gamry Instruments is the world leader in designing low noise potentiostats. Like the Interface 1010, the Interface 5030 has noise levels of <20 µV rms. Lower noise = better measurements.

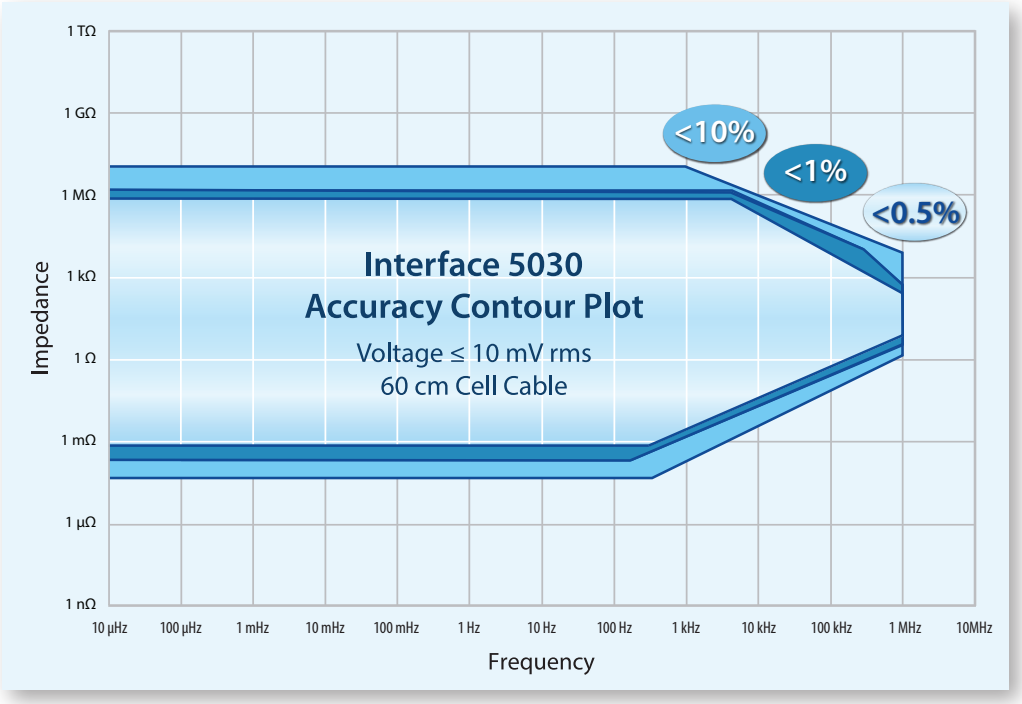
DSP mode

By acquiring data at 60 kHz (that's 16.6 microseconds per point), the Interface 5030 is able to massively oversample for the best signal-to-noise ratio in the industry. Combine DSP acquisition with the low intrinsic noise in the instrument, and you'll see how Gamry Instruments brings new meaning to the term low noise.

Impedance Done Right

Every Interface 5030 is equipped to perform EIS without requiring an expensive FRA or additional option boards. The build-in Direct Digital Synthesis circuitry generates a pure sine wave that is ideal for electrochemical applications. The Interface 5030 can accurately measure impedances down to 150 µΩ. The Interface 5030P can perform galvanostatic EIS up to 20 kHz while the Interface 5030E can perform potentiostatic, galvanostatic, and hybrid EIS up to 1 MHz.

Accuracy Contour Plot



Filter

The Interface 5030 employs a combined total of ten active filters for the Voltage and Current channels. These filters allow for optimal rejection of external signals and noise which can adversely impact your measurements. The Interface 5030 automatically selects the best filter for the acquisition mode, while still offering expert users the choice for manual adjustments.

Smart Cell Cables

The cell cables for the Interface 5030 have been optimally designed for impedance testing of low-impedance devices such as battery and fuel cells. Low stray capacitance, high resistance isolation, and separate sense and current leads ensures an accurate EIS measurement down to 150 μΩ.

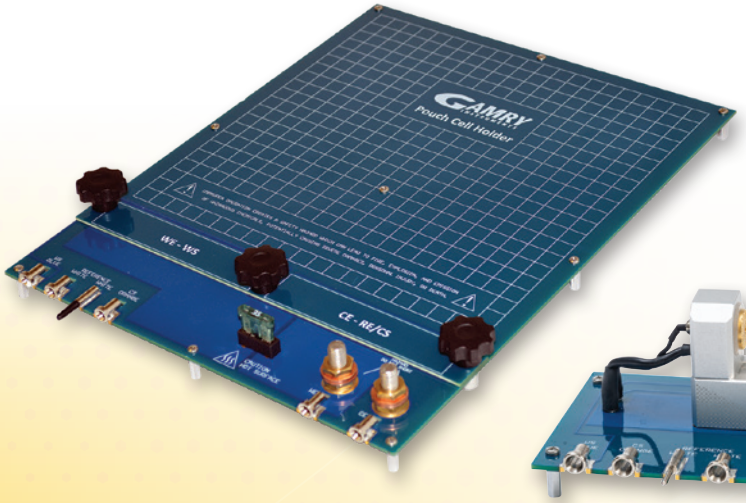
Multi-stage Cell Switch

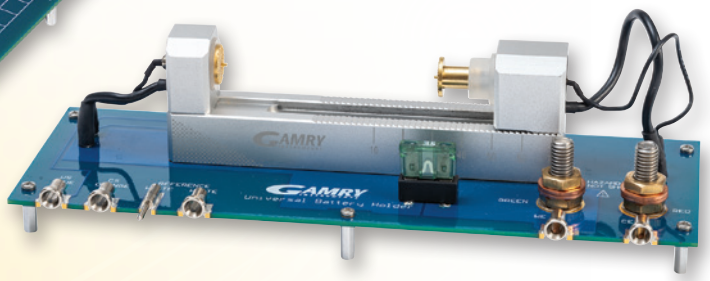
A sophisticated two-stage cell switch is used in the Interface 5030 design. The first stage is a relay which insures pure electrical isolation, while the second stage is an ultra-fast MOSFET switch with zero contact bounce. The second stage allows for better signal application with minimal spikes, as well as the ability to perform current interrupt iR compensation.

Accessories

Gamry Instruments has several accessories to help you with your research. Our battery holders are designed for four-point direct-contact measurements, reducing contact resistance, giving you more accurate results. Additionally, we have cell kits designed for testing of lithium battery materials or electrolytes. See our website for additional information on these accessories.







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Floating

The Interface 5030 is electrically isolated from ground, allowing you to make measurements on earth-grounded electrodes or multiple working electrodes in a shared cell. You can also run the Interface 5030 in parallel with a power supply or electronic load when studying larger devices or a stack. The power supply or external load can supply or sink large DC currents while the Interface 5030 provides capabilities for EIS measurements.



Throughput and Flexibility

The Interface 5030 can be configured in a multichannel configuration for increased throughput. Our Interface Power Hub can accommodate up to eight potentiostats in a single chassis. Our multichannel potentiostat even allows you to undock an instrument and move it directly next to your cell or to another lab. This is especially important for impedance measurements where longer cables limit measurement bandwidth.

Our multichannel system does not sacrifice on performance. Each individual channel has the full capabilities of an individual Interface 5030.

The rear of the Interface 5030 contains a User I/O connector that contains digital inputs and digital outputs and an auxiliary voltage out. A Sync port allows multiple potentiostats to be synced together for bipotentiostat and n-stat experiments. The front of the Interface 5030 contains a Monitor connector that can be used for monitoring temperture when coupled with an RTD probe. The monitor port also can be used to output voltage and current to be read by an external device. A monitor expansion board is available as an accessory.

POTENTIOSTAT/GALVANOSTAT/ZRA SPECIFICATIONS*

	Interface 5030P	Interface 5030E
SYSTEM		
Cell Connections	2, 3, 4 or 5	2, 3, 4 or 5
Maximum Current	± 5A	± 5A
Current Ranges	6 (50 µA - 5 A)	6 (50 µA - 5 A)
Current Ranges (including internal gain)	8	8
Minimum Current Resolution	150 pA	150 pA
Maximum Applied Potential	±6 V	±6 V
Rise Time	< 1 µs	< 1 µs
Minimum Timebase	10 µs	10 µs
Noise and Ripple (typical)	< 20 µV rms	< 20 µV rms
CONTROL AMPLIFIER		
Compliance	±6.5V	±6.5V
Output Current	> ± 5 A	> ± 5 A
Speed Settings	5	5
Unity Gain Bandwidth	1050, 250, 434, 4.4, 0.5 kHz	1050, 250, 434, 4.4, 0.5 kHz
EIS MEASUREMENT		
EIS	10 µHz-20 kHz	10 µHz-1 MHz
Current AC Amplitude	±5 A max	±5 A max
ELECTROMETER		
Input Impedance	> 10^{12} Ω || < 2 pF	> 10^{12} Ω || < 2 pF
Input Current (typical)	< 25 pA	< 25 pA
Bandwidth	> 10 MHz	> 10 MHz
CMR	> 98 dB (10 kHz), > 88 dB (100 kHz)	> 98 dB (10 kHz), > 88 dB (100 kHz)
POTENTIAL		
Applied Accuracy	±1 mV ± 0.2% of setting	±1 mV ± 0.2% of setting
Applied Resolution	200 µV, 50 µV, 12.5 µV/bit	200 µV, 50 µV, 12.5 µV/bit
Measured Accuracy	±1 mV ± 0.3% of reading	±1 mV ± 0.3% of reading
Measured Resolution	200 µV, 20 µV, 2 µV/bit	200 µV, 20 µV, 2 µV/bit
CURRENT		
Applied/Measured Accuracy	±25 pA ± 0.05% of range ± 0.2% of value	±25 pA ± 0.05% of range ± 0.2% of value
Applied/Measured Resolution	0.003% full-scale/bit	0.003% full-scale/bit
Bandwidth	> 5 MHz (5 mA)	> 5 MHz (5 mA)

* Selected Specifications Specifications subject to change.

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