Redefining Electrochemical Measurement

Specifications for Gamry Potentiostats

Gamry Potentiostats are specified conservatively, so you can be sure that your Gamry Potentiostat will meet the specifications anywhere in the world. The actual performance may be significantly better than the published specifications indicate. We measured several critical specifications of our Potentiostats and we report them below as typical. The typical specifications are representative of the actual performance of the Potentiostat but are not guaranteed.

	Reference 600	Reference 3000	Interface 1000
Potentiostat	Yes	Yes	Yes
Galvanostat	Yes	Yes	Yes
Zero Resistance Ammeter	Yes	Yes	Yes
Cell Connections	2, 3, or 4	2, 3, or 4	2, 3, or 4
Floating (Isolated from earth)	Yes	Yes	Yes
SYSTEM			
Max. Current	±600 mA	Hi Current : ±3 A Hi Voltage : ±1.5 A	±1 A
Current Ranges	11 (60pA-600mA)	11	9 (10 nA - 1 A)
Current Ranges (with internal gain applied)	13(600 fA-600mA)	13	11 (100 pA - 1 A)
Min. Voltage Resolution	1 µV		1 µV
Min. Current Resolution	20 aA		3.3 fA
Max. Applied Potential	±11 V	±11 V Stack Mode: ±32 V	±12 V
Rise Time	<250 ns	<400 ns	TBD
Noise and Ripple	<10 µV rms	<2 µV rms	<20 µVrms
Noise and Ripple (typical)	<2 µV rms		
Min. Time Base	3.333 µs	3.333 µs	10 µs
Max. Time Base	715 s		715 s
Min. Potential Step	12.5 µV		12.5 µV
Analog/Digital Converter	16 bit	16 bit	16 bit
Max. Data Points Per Experiment	262,143	262,143	
EIS MEASUREMENT			
Frequency Range	10 µHz – 1 MHz	10 µHz – 1 MHz	10 µHz - 1 MHz
EIS Accuracy			See Accuracy Contour Plot
Max AC Amplitude	2110 mV rms	2110 mV rms	2.33 Vrms
Min AC Amplitude	4.03 µV rms	4.03 µV rms	17.8 µVrms
CONTROL AMP			
Compliance Voltage	>±22 V	Hi Current : ±15 V Hi Voltage : ±32 V	±20 V
Output Current	>±600 mA		>±1 A
Speed Settings	5	5	5
Unity Gain Bandwidth (typical)	980, 260, 40, 4, 0.4 kHz	980, 260, 40, 4, 0.4 kHz	980, 260, 40, 4, 0.4 kHz

	Reference 600	Reference 3000	Interface 1000
ELECTROMETER			
Input Impedance	$>10^{14}$ Ω	$>10^{14}$ Ω	$>10^{12}$ Ω
Input Current	<5 pA	<10 pA	<20 pA (6 pA typical)
Input Current (typical)	<2 pA		
Bandwidth (-3dB) (typical)	> 15 MHz	>10 MHz	>10 MHz
Common Mode Rejection Ratio	>80 dB (3 Hz) >60 dB (1 MHz)	>80 dB (3 Hz) >60 dB (1 MHz)	>80 dB (10 kHz) >60 dB (1 MHz)
APPLIED POTENTIAL			
Accuracy	± 1 mV ±0.2 % of setting	± 1 mV ±0.2 % of setting	±1 mV ±0.2% of setting
Accuracy (typical)	±375 µV ± 0.04%		
Resolution	12.5 µV, 50 µV, 200 µV/bit		12.5 µV, 50 µV, 200 µV/bit
Drift	<20 µV/°C	<20 µV/°C	<20 µV/°C
Potential Scan Range	±0.4 V, ±1.6 V, ±6.4V	±0.4 V, ±1.6 V, ±6.4V	±0.4 V, ±1.6 V, ±6.4V
MEASURED POTENTIAL			
Accuracy	± 1 mV ±0.3% of reading	± 1 mV ±0.3% of reading	± 1 mV ±0.3% of reading
Accuracy (typical)	±250 µV ± 0.05%		
Full-Scale Ranges	12 V, 3 V, 300 mV, 30 mV	32 V, 12 V, 3 V, 300 mV, 30 mV	±12 V, ±3 V, ±300 mV, ±30 mV
Resolution	400 µV,100 µV, 10 µV, 1 µV/bit		400 µV,100 µV, 10 µV, 1 µV/bit
Offset Range	±10 V		±12 V, ±3 V
APPLIED CURRENT			
Accuracy	±10 pA ±0.3 % of range	±10 pA ±0.3 % of range	±5 pA ±0.3% of range
Accuracy (typical)	±3 pA ± 0.08%		
Resolution	0.0033 % full- scale/bit	0.0033% full- scale/bit	0.0033 % full- scale/bit
MEASURED CURRENT			
Accuracy	± 10 pA ±0.3% of range	± 10 pA ±0.3% of range	±5 pA ±0.3% of range
Accuracy (typical)	±3 pA ± 0.12%		
Resolution	0.0033 % full-scale/bit	0.0033% full- scale/bit	0.0033% full- scale/bit
Bandwidth (-3dB) ***Note: Bandwidth is current range dependent***	>10 MHz (600 mA-600 µA) >1.5 MHz (60 µA) >0.15 MHz (6 µA)		> 10 MHz (1A - 100 µA) > 1.5 MHz (10 µA) > 0.15 MHz (1 µA)
Stability Settings	4		3
Post Offset Gain	1, 10 ,100		1X, 10X, 100X
Offset Range	±1X full-scale		±1X full-scale

	Reference 600	Reference 3000	Interface 1000
iR COMPENSATION			
Mode			Current Interrupt
Minimum interrupt time	33 μs	33 μs	33 μs
Maximum interrupt time	715 s	715 s	715 s
AUXILIARY A/D INPUT			
Range	±3 V	±3 V	
Resolution	0.1 mV		
Input Impedance	>100 kΩ or >10 GΩ	>100 kΩ or >10 GΩ	
AUXILIARY D/A OUTPUT			
Range	0-4 V	0-4 V	
Resolution	1 mV	1 mV	
AUXILIARY ELECTROMETER			
Input Voltage			
Common Mode Range		±Compliance Voltage	
Input Resistance		>10 Gohm	
Input Current		<10 pA	
Difference Amp			
Difference Voltage		±5 V	
CMRR			
DC to 1 kHz		>86 dB	
1 kHz to 100 kHz		>72 dB	
Channel Cross-Talk		<80 dB	
Voltage Measurement			
Nominal Voltage Range		±5.12 V	
μV/bit (no gain)		156.25	
μV/bit (x100 gain)		1.5625	
WEIGHT	3 kg	6 kg	2.4 kg
DIMENSIONS	9 (W) x 19 (H) x 27 (D) cm	20 (W) x 23 (H) x 30 (D) cm	24 (W) x 6 (H) x 27 (D) cm

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Specifications subject to change without notice.