

### Low Current Interface



The VersaSTAT-LC Low Current Interface is a plug-in, research grade option compatible with many of the Princeton Applied Research potentiostats/galvanostats, designed for the measurement of ultra-low currents with greater accuracy and resolution than the base system. With the addition of this option, the minimum current range is improved to 4 pA (80 fA with the PARSTAT 4000A) and the current resolution to 122 aA (2.5 aA with the PARSTAT 4000A).

The VersaSTAT-LC is ideal for ultra-low current applications requiring high resolution. Applications involving ultramicroelectrodes, coatings research, corrosion testing of bioimplants, and sensor development are all areas where greater current sensitivity may be needed.

This product can be purchased at any time as a plug-in option. It consists of an interface cable to connect to the potentiostat/galvanostat, a main body including the high input impedance electrometer and additional current ranges, and the cell leads. Once attached to the potentiostat/galvanostat users can execute the built in DC Calibration routine. VersaSTAT 3 users will gain access to the improved E and I Filters as well as additional bandwidth stabilization filters.

- Femtoampere accuracy and attoampere resolution for both DC and AC (EIS) measurements
- Auto-current ranging capability from 200 mA 4 pA (0.08 pA for PARSTAT 4000A)
- Plug-in add-on for VersaSTAT and many PARSTAT Series potentiostats/galvanostats
- Expands E and I filter selection for VersaSTAT 3

Now compatible with VersaSCAN for ultimate resolution of SECM experiments

# **Key Specifications**

Princeton Applied Research	VersaSTAT" LC
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System Performance PARSTAT 40	00/+/A
Minimum Current Range	80 fA (8 x 10 <sup>-14</sup> A)
Minimum Current Resolution	2.5 aA (2.5 x 10 <sup>-18</sup> A)
System Performance VersaSTAT S	eries and PARSTAT MC 1000
Minimum Current Range	4 pA (4 x 10 <sup>-12</sup> A)
Minimum Current Resolution	122 aA (122 x 10 <sup>-18</sup> A)
Power Amplifier	
Maximum Current	+ 200 mA
Differential Electrometer	
Input Bias Current	<200 fA at 25°C
Maximum Voltage Range	± 10 V maximum
Input Voltage Differential	± 10 V
Bandwidth	700 kHz (-3 dB)
Common Mode Rejection	>60 dB @ 100 Hz, >50 dB @ 100 kHz
Input Impedance	>1014 $\Omega$ in parallel with <200 fF, typical
Current Measurement	
Ranges	12 decades, 200 mA to 4 pA
	(80 fA for PARSTAT 4000/+/A)
Accuracy (dc)	2 μ to 200 mA < 0.2% full scale
	20 nA and 200 nA ranges < 0.5% full scale
	200 pA - 4 pA ranges < 1.0% full scale $\pm$ 500 fA
	full scale
Current Control	
Applied Current Range	± full scale per range
Applied Current Resolution	$\pm 1/32,000 \text{ x full scale}$
Applied Current Accuracy	$\pm 0.5\%$ of range, $\pm 0.5\%$ of reading
Max. Current Range/Resolution	± 200 mA / 10 μA
Min. Current Range/Resolution	$\pm 4 \text{ pA} / 122 \text{ aA for VersaSTATs and PMC1000}$

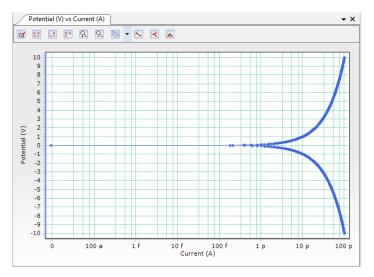
Specifications subject to change.

## **Ordering Information**

Model Number VersaSTAT-LC

#### **Option** Low Current Interface

(80 fA / 2.5 aA for PARSTAT 4000/+/A)



Tafel Plot using low current interface demonstrating low current measurement on a 100 GOhm (1E11) resistor

### Princeton Applied Research

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