1260A

Impedance/gain-phase Analyzer

The 1260A Impedance/gain-phase Analyzer is - without doubt - the most powerful, accurate and flexible Frequency Response Analyzer available today.

In daily use by leading researchers wherever measurement integrity and experimental reliability are of paramount importance, 1260A's solid reputation is frequently endorsed in published research papers in fields such as:

- Corrosion studies
- Battery research and fuel cells
- Solar cells
- LCDs
- Bio-materials
- Ceramics / composites
- Electronic component development
- Civil engineering

Part of Solartron Analytical's extensive range of precision products designed to provide cost effective solutions for dc and ac analysis in electrochemical and materials research, 1260A offers an outstanding measurement specification for impedance spectroscopy:

Huge frequency range

Spanning 10µHz to 32MHz with 0.015ppm resolution, 1260A provides excellent coverage for virtually all chemical and molecular mechanisms - all in a single instrument.

Unbeatable accuracy

With an accuracy of 0.1%, 0.1°, measurements can be made with complete confidence, and even the most subtle changes in sample behavior detected and quantized.

Noise free Analysis

1260A uses Solartron Analytical's patented single-sine correlation technique, which inherently removes
the noise and harmonic distortion which plagues lesser instruments.

- Frequency resolution: 1 in 65 million (0.015ppm)
- 0.1%, 0.1° accuracy -
- Resolution to 0.001dB, 0.01°
- Measures impedances >100MΩ
- 2-, 3- and 4-terminal measurement configurations
- Polarization voltage up to ±40.95V
- Renowned ZPlot software package simplifies experiments and optimizes throughput

Systems

When combined with other products from Solartron Analytical's range, including well-proven application software, 1260A can form the heart of an advanced electrochemical and
materials measurement system, to provide superb accuracy, flexibility and reliability - even for the most complex research problems.

Impedance measurement

Virtually every liquid and solid is able to pass current when a voltage is applied to it. If a variable (ac) voltage is applied to the material, the ratio of voltage to current is known as the impedance. The measured impedance varies with the frequency of the applied voltage in a way that is related to the properties of the liquid or solid. This may be due to the physical structure of the material, to chemical processes within it or a combination of both.

The advantages of impedance measurement over other techniques include:

- Rapid aquisition of data
- Accurate, repeatable measurements
- Non-destructive
- Highly adaptable to a wide variety of different applications
- Ability to differentiate effects due to electrodes, diffusion, mass/charge transfer by analysis over different frequency ranges
- Equivalent circuit/modelling techniques for detailed analysis of results

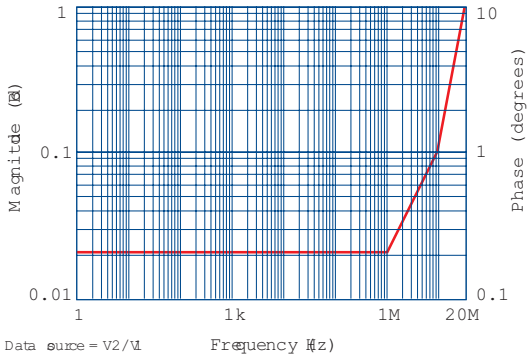
1260A Impedance/Gain-Phase Analyzer Specification

Generator	**Voltage mode**	**Current mode**
AC Amplitude <10MHz >10MHz	0 to 3 V rms 0 to 1 V rms	0 to 60 mA rms 0 to 20 mA rms
Maximum ac resolution	5 mV	100 µA
DC bias range	±40.95 V	±100 mA
Maximum DC resolution	10 mV	200 µA
Output impedance	50 Ω±1%	>200 kΩ <1 kHz
Frequency	Range: 10 µHz to 32 MHz, max resolution: 10 µHz Error: ±100ppm, stability, 24hrs ±1°C: ±10ppm	
Sweep types	Frequency (log or lin), AC/DC voltage, AC/DC current	
Maximum voltage	Hi to lo: ±46 V peak, lo to ground: ±0.4 V peak	
Maximum current	±100 mA peak	
Impedance	Lo to ground: 100 kΩ, <10 nF	
Connection	Single BNC, floating shield	
Output disable	Contact closure or TTL logic 0	

Input System	**Voltage (2x)**	**Current**
3 independent analyzers operating in parallel		
Ranges	30 mV, 300 mV, 3 V	6 µA, 60 µA, 600 µA, 6 mA, 60 mA
Maximum resolution	1 µV	200 pA
Full scale peak	±5 V	±100 mA
Inputs protected to	±46 V	±250 mA
Connections	Single/differential BNC	single BNC
Shields	Floating/grounded	
Coupling	DC or AC (-3dB at 1Hz)	DC or AC (-3dB at Hz)
Input Impedance		
Hi to shield	1 MΩ, <35 pF	>600 µA range, 1 Ω
Shield to ground	10 kΩ, 330 pF	
Limits of error	Ambient temperature 20±10°C, integration time >200 ms. Data valid for one year after calibration.	

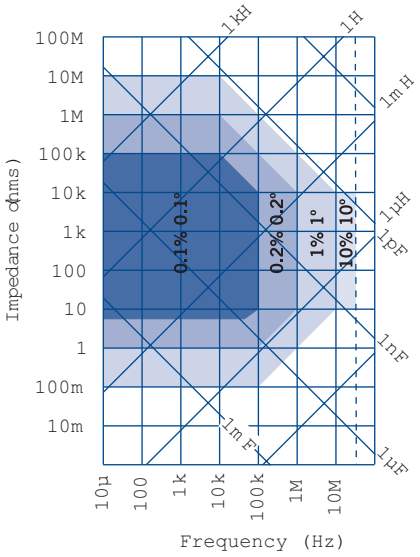
Results	
Variable	Frequency, AC amplitude, DC bias
Measured parameters	Voltage gain, phase, real, imaginary, Z, R, X, Y, G, B, V, I group delay, C, L, Q, D
Power supply	90 to 126 V, 198 to 252 V, 48 to 65 Hz
Power consumption	230 VA
Dimensions (w x h x d)	432 mm x 176 mm x 573 mm (17 in x 6.93 in x 22.56 in)
Weight	18 kg (40 lbs)
Operating temp. range	0 to 50°C (32 to 122 °F)

Limit of error Gain-phase measurements
Applies to all ranges at >10% full scale



Impedance Measurements

Applies for stimulation level of 1 V for impedances >50 Ω or 20 mA for impedances <50 Ω



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