

Stretching the limits of impedance testing



# 1252A

## LF Frequency Response Analyzer

The 1252A Frequency Response Analyzer is one of a range of instruments that will meet your needs today and in the future.

Using the single sine technique the 1252A provides precise measurement of gain and phase between any two points in a system. This fully digital technique is used to assess the performance of both simple and complex systems - mechanical, electronic and electrochemical.

For over 30 years Solartron Analytical have produced frequency response analyzers, instruments which are regarded throughout the world as industry standards. This unsurpassed knowledge and experience has been used to produce the 1252A, with its outstanding 300kHz frequency range and 1 in 65 million frequency resolution.

The 1252A Frequency Response Analyzer applies the power and sophistication of modern measurement technology; simple in concept, fast and precise in performance, and so easy to use, even by non-technical personnel.

The 1252A Frequency Response Analyzer's key features include:-

- Measures gain, phase and group delay
- Unbeatable accuracy - 0.2%, 0.02dB, 0.2°
- Deep dynamic range - 130 dB with autoranging
- Wide frequency range - 10µHz to 300kHz
- Ultrafine frequency resolution up to 1 in 65 million
- Automatic sweeps of frequency, amplitude or dc bias
- Automatic rejection of noise and harmonics
- Blind front panel software control only

### Electrochemistry

Measurement of impedance has become an important tool in the study of electrochemical/biological phenomena and material properties. The 1252A together with a potentiostat such as 1287, can be used in a wide range of applications, including:-

- Corrosion and corrosion protection
- Properties of organic and inorganic coatings and films
- Development of solid electrolytes for oxygen sensors
- Development of novel anode/cathode materials and electrolytes
- Studies of animal and plant tissue properties
- Photoelectric effects

### Materials Testing

When combined with a 1296 Dielectric Interface and temperature test equipment the 1252A can be used to test a wide range of materials, such as:-

- Supercapacitor/fuelcell electrochemistry
- Relaxation processes in the molecular dynamics of liquid crystals, polymers and liquids

- Charge transport in semiconductors, organic crystals, ceramics etc.
- Analysis of chemical reactions, polymerization and curing processes
- Novel gas and liquid sensors
- Characterization of insulating and semiconductor materials
- Quality control in the production of insulators, printed circuit boards, etc.

### Electronic Testing

1252A is ideally suited to a wide variety of applications in the field of electronics - from fundamental aspects, such as the characterization of the electrical and mechanical properties of materials, to the development and testing of components and complete circuits.

Generally these applications require the measurement of transfer functions and group delay over a wide frequency range. In the case of filters, a wide dynamic range coupled with high frequency resolution are also needed to enable the attenuation characteristics to be fully defined.



## 1252A LF Frequency Response Analyzer Specification

Generator	Sine
Waveform	
Frequency	range: 10 $\mu$ Hz to 300kHz, max resolution: 10 $\mu$ Hz error: $\pm$ 100ppm, stability (24hrs, $\pm$ 1 C): 10ppm
Amplitude	$\leq$ 10MHz: 0 to 3V rms, >10MHz: 0 to 1V rms
Resolution	5mV
Error	
(driving open circuit)	$\pm$ (5% + 1% / MHz + 5mV)
Distortion	<2%
Sweep types	frequency (logarithmic and linear), amplitude (linear) dc bias (linear)
Resolution	frequency: >10000points, amplitude: >200points
dc Bias	
Range	-40.95V to +40.95V
Resolution	10mV
Error	
(driving open circuit)	$\pm$ 1% $\pm$ 10mV
Max. Current	$\pm$ 100mA
Max. Voltage	
(lo to ground)	$\pm$ 0.4V
Impedance	output: 50 $\Omega$ $\pm$ 1%, lo to ground: 100 $\Omega$ , <10nf
Connection	single BNC, outer floating to $\pm$ 0.4V
Output is short circuit proof	

### Analyzers

*Two independent analyzers operating in parallel.*

Range	Sensitivity (dynamic range)	Full scale peak input	Com. Mode rejected
30mV	1 $\mu$ V (90dB)	45mV	5V
300mV	10 $\mu$ V (90dB)	500mV	5V
3V	100 $\mu$ V (90dB)	5V	5V

Input protected to	$\pm$ 46V peak
Coupling	dc or ac (-3dB at 1Hz)
Impedance	Hi to outer: 1M $\Omega$ $\pm$ 2%, <35pF Outer to ground (floating): 10k $\Omega$ , <330pF

Common mode rejection (at 300kHz)	>50dB
Cross-channel isolation (at 300kHz)	>100dB
Integration time	0.01s to 10 <sup>s</sup> , or auto
Measurement delay	0 to 10 <sup>s</sup>

*This is a remotely controlled instrument which can only be configured via software*

Power supply	90 to 126V, 198 to 252V, ac, 48 to 65Hz
Consumption	200VA
Dimensions (w x h x d)	432mm x 176mm x 573mm (17in x 6.93in x 22.56in)
Weight	18kg (40lbs)
Operating temp. range	0 to 50 C (32 to 122 F)

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Solartron Analytical's Quality  
System is approved to  
BS EN ISO 9001:2008



...part of **AMETEK**® Advanced Measurement Technology

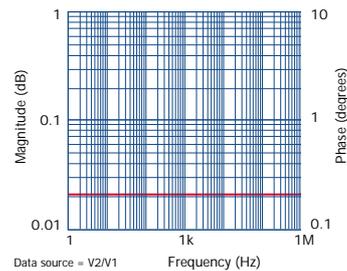
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### Gain-Phase measurements

Applies to all ranges at >10% full scale



Solartron Analytical is a world leader in instrumentation and software for the characterization of materials and electrochemical systems using precision electrical measurement techniques.

These techniques find particular use in the fields of corrosion, battery and fuel cell research, dielectric analysis and electrochemistry. The product portfolio includes industry standard frequency response analyzers, potentiostats, electrochemical software (Zplot and CorrWare) and battery test equipment.