

1255A

HF Frequency Response Analyzer

The 1255A 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 1255A 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 1255A, with its outstanding 20MHz frequency range and 1 in 65 million frequency resolution.

The 1255A 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 1255A 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 20MHz
- Ultrafine frequency resolution up to 1 in 65 million
- Automatic sweeps of frequency, amplitude or dc bias
- Automatic rejection of noise and harmonics

Electrochemistry

Measurement of impedance has become an important tool in the study of electrochemical/biological phenomena and material properties. The 1255A 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 1255A 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

1255A 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.



1255A HF Frequency Response Analyzer Specification

Generator

| | |
|------------------------|--|
| Waveform | Sine |
| Frequency | range: 10μHz to 20MHz, max resolution: 10μHz error: ±100ppm, stability (24hrs, ±1°C): 10ppm |
| Amplitude | ≤10MHz: 0 to 3V rms, >10MHz: 0 to 1V rms |
| Resolution | 5mV |
| Error | |
| (driving open circuit) | ±(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) | ±1%±10mV |
| Maximum Current | ±100mA |
| Maximum Voltage | |
| (lo to ground) | ±0.4V |
| Impedance | output: 50Ω±1%, lo to ground:100Ω, <10nf |
| Connection | single BNC, outer floating to ±0.4V |
| Output is short circuit proof | |

Analyzers

Two independent analyzers operating in parallel.

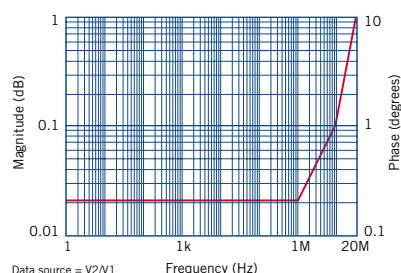
| Range | Sensitivity (dynamic range) | Full scale peak input | Com. Mode rejected |
|-------|--------------------------------|--------------------------|-----------------------|
| 30mV | 1μV (90dB) | 45mV | 5V |
| 300mV | 10μV (90dB) | 500mV | 5V |
| 3V | 100μV (90dB) | 5V | 5V |

| | |
|--------------------------------------|---|
| Input protected to | ±46V peak |
| Coupling | dc or ac (-3dB at 1Hz) |
| Impedance | Hi to outer: 1MΩ ±2%, <35pF Outer to ground (floating): 10kΩ, <330pF |
| Common mode rejection (at 1MHz) | >50dB |
| Cross-channel isolation (at 1MHz) | >100dB |
| Integration time | 0.01s to 10 ⁵ s, or auto |
| Measurement delay | 0 to 10 ⁵ s |
| 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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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.

Arun Technology, an operating unit of Solartron Analytical, provides a range of metal analyzers using optical emission techniques for determining elemental content. The units in static laboratory or mobile format are used in foundries, steelworks, or scrapyards for metals analysis or material identification.



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