



Next Generation Technology

# DIELECTRIC ANALYZER

FYTRONIX DIELECTRIC X-300



**DIELECTRIC MEASUREMENT SYSTEM**



**FYTRONIX DIELECTRIC CHARACTERIZATION SYSTEM**



*Advanced Dielectric Characterization System for Nanomaterials*

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## Overview

The **Dielectric Analyzer** is a cutting-edge platform designed for precise and comprehensive dielectric and impedance characterization of advanced materials. The system integrates **high-precision frequency-dependent measurements** with optional **temperature-controlled analysis**, providing researchers and engineers with detailed insight into material electrical properties.

With its ability to simultaneously measure multiple electrical parameters and analyze their frequency and temperature dependence, this system is ideal for **nanomaterials, polymers, ceramics, and composite research**.

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## Key Features

- **Wide Frequency Range:** 120  $\mu\text{Hz}$  – 25 MHz
- **Optional Temperature Control:** Room Temperature (RT) – 150°C (350 K)
- **Closed Sample Holder** for safe and stable measurements
- **Advanced Software** for automatic data acquisition, analysis, and visualization
- **Simultaneous Multi-Parameter Measurement** of 14 impedance and dielectric parameters

- **AC Conductivity & Dielectric Property Analysis** from room temperature to 150°C (or up to 350 K optionally)
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## Measured Parameters

The system can measure the following parameters simultaneously:

Parameter	Symbol
Impedance	
Admittance	
Phase Angle	$\theta$
Parallel Resistance	$R_p$
Series Resistance	$R_s$
Conductance	$G$
Reactance	$X$
Susceptance	$B$
Parallel Capacitance	$C_p$
Series Capacitance	$C_s$
Parallel Inductance	$L_p$
Series Inductance	$L_s$
Dielectric Loss	$D (\tan \delta)$
AC Conductivity	$\sigma_{ac}$
Real part of dielectric constant	$\epsilon'$
Imaginary part of dielectric constant	$\epsilon''$

**Note:** Measurements can be performed as a function of **frequency** at constant temperature, or as a function of **temperature** at constant frequency.

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## Technical Highlights

- Simultaneous measurement of **all 14 parameters** at constant temperature vs. frequency
  - Simultaneous measurement at constant frequency vs. temperature
  - Temperature ranges:
    - RT
    - RT – 350 K (Optional)
  - AC conductivity and dielectric properties captured across wide temperature and frequency ranges
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## Applications

- Dielectric property analysis of **polymers, ceramics, and composites**
  - AC conductivity studies for **energy storage and electronic applications**
  - Frequency-dependent impedance measurements for **sensor and device development**
  - Temperature-dependent dielectric characterization for **advanced material research**
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## Why Choose Dielectric & Impedance Analyzer?

- **Comprehensive Measurement:** 14 key electrical parameters in one platform
  - **Flexible Temperature Options:** Room temperature to 350 K
  - **Advanced Data Analysis:** Software provides automated, real-time processing
  - **Reliable and Reproducible:** Closed sample holder ensures stability and repeatability
  - **Research-Ready:** Suitable for academia, industrial R&D, and nanomaterials labs
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