## Omega Modular Dielectric Impedance Analyzer

# Product specifications

## Key features:

- Modular Dielectric Impedance Analyzer
- Up to 100cm BNC cable between Analyzer and Interface
- HZx Interface with 2, 3 or 4 electrode configurations(25cm BNC cable up to 100 Mhz)
- HZa Sample cell integrated Interface with Fixed connections
- Frequency range: 1 µHz...100MHz
- Impedance range: $1\ m\Omega - 500\ T\Omega$
- Capacitance range: 1 fF − 1 kF
- Inductance range: 10 nH − 1 kH
- Precision $\leq 0.01\ \%$
- Lowest measurable phase angle: 0.001°
- 3 Vrms AC Generator Signal
- ±40 VDC Bias range
- Configurable frequency and time-domain mode waveforms.
- PC-based measurement control (Eymea).
- Simple connection through Ethernet, GPIB, Full Speed USB or RS-485.
- Interfaces Instructions and libraries for full instrument control from Java, C etc.

## Brief description

Omega is a Modular Dielectric Impedance Analyzer which connects to a measurement interface(different options can be swapped) to provides fast and accurate measurements over a wide impedance range. Omega samples and measures the voltage and the current signals directly without needing a balanced-bridge configuration. As a result it is capable of measuring at frequencies as low as 1µHz and providing reliable impedance measurements up to 500 TΩ and allowing for a faster impedance measurements(Fast Sampling option).

## Eymea Software

Eymea boosts a friendly user interface that helps the user to maximize work efficiency. It allows for auto identification of all supported analyzers and temperature controllers that are supported. It allows for almost infinite user measurement dimensions which can be defined in order to specifically tailor the measurements for every user's need. It contains a very flexible Plot program which allow users to plot live/saved measured values in a single keyboard key or shortcut. Instrument and user interface settings can be saved and reloaded to minimize tedious tasks and to en-power the user to focus on the real matter at hand.

## Detailed description

Using latest digital processing techniques, Omega is capable of measuring wide impedance range and phase angle resolution. Using four wire configuration reduces the effects of lead inductance and stray capacitance which are important in impedance applications especially at high frequencies(with using 25Ω - 25cm up to 100 Mhz).

Omega comes with the Eymea software and connects to PC through GPIB, Full Speed USB, or Ethernet.
Eymea provide the graphical user interface to measure needed frequency points sequentially. Omega(Fast Sampling option) supports commands for fast measurement of points within a defined time window with time stamps for each measured point. This allows for very fast measured points upwards of 650 pts/s( according to frequency and range).
Measured data from each analyzer can be stored as result file, vector graphics or a plain data file for further analysis or plotting in other software.
Measurement Setup allows for defining a user set amount of free variables(AC voltage, Bias, Time, Temperature, Higher harmonics, etc.) which the software will cycle through until the measurement is done. An analyzer setup can be copied to another one with a simple procedure.

## Options

Omega can be configured in multiple options to suite any particular budget and application requirements:

**Basic Model:**
1 mHz — 500 kHz.
Base Precision: 0.01% 0.001°
Impedance range: 1 mΩ — 500 TΩ
Acquisition speed: 10 pts/s
Connection: Ethernet

**Frequency options:**
- Base:  1 mHz — 500 kHz
- FR-EX1: 1 µHz — 5 MHz
- FR-EX2: 1 µHz — 50 Mhz
- FR-EX3: 1 µHz — 100 Mhz

**Limitation options:**
- Base:
    described in basic model
- Enhanced:
    described in enhanced model

**Fast Sampling option**:
- up to 650 pts/s

**Bias option**:
- ±40 VDC Bias range

**Connection option:**
- Base Connection: Ethernet
- EX-C1: USB
- EX-C2: GPIB
- EX-C3: RS-485

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