

EddyCus® TF lab 4040HF – High Frequency Thin Film Tester

P_T_4040HF_21



Highlights

- ▶ Contact-free and realtime
- ▶ Accurate single-point measurement
- ▶ Manual mapping guided by easy-to-handle software
- ▶ Measurement of encapsulated layers
- ▶ Complex impedance analysis for separation of electric, dielectric and magnetic properties

Applications

- ▶ Composition assessment of electric, dielectric, magnetic properties
- ▶ Printing
- ▶ Impregnation
- ▶ Drying
- ▶ Curing
- ▶ Chemical reaction monitoring
- ▶ Mixing
- ▶ Sorting
- ▶ Defect analysis (anomalies, hot spots)

Device Series

- ▶ Wet thickness (μm) / weight (g/m^2)
- ▶ Drying status (%)
- ▶ Permittivity (F/m) *Beta*
- ▶ Conductivity / resistivity (mOhm cm)
- ▶ Permeability (H/m) *Beta*
- ▶ Sheet resistance (Ohm/sq)
- ▶ Electrical anisotropy (%)
- ▶ Metal thickness (nm, μm)

Materials

- ▶ Wet thin films and surfaces
- ▶ Wet components and structures
- ▶ Liquids, slurries, inks, resins, dispersions, chemicals
- ▶ Powders and particle films (cosmetics and medicines)
- ▶ Bulk materials (plastics, ceramics)
- ▶ Composites (prepregs, impregnated fibers and tapes, CFRP)
- ▶ Compounds (casting compounds)

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Engineered and Made in Germany 



Working Principle

- ▶ EddyCus® sensors generate electromagnetic fields (EMFs)
- ▶ EMFs change when material with electric, dielectric and /or (ferro)magnetic properties is present
- ▶ The evaluation of the resulting change in the EMF provide information on
 - ▶ Conductivity (e.g. metals, semiconductors, graphite)
 - ▶ Permeability (e.g. Co, Ni, Fe)
 - ▶ Permittivity (e.g. water, solvent, polymers, chemicals)
 - ▶ Complex impedance analysis is used to separate properties

Device Characteristics

Measurement technology	Non-contact high frequency eddy current sensor
Substrates	Foils, glass, various containers
Substrate area	750 mm x 650 mm / 29.5" x 25.6" (for 400 mm x 400 mm samples)
Max. sample thickness/ sensor gap	Transmission setup: 3 – 50 mm (defined by the thickest sample) Reflection setups: infinite (only surface area is analyzed)
Measurement types	Wet thickness (μm) / weight (g/m^2) / drying status (%) / conductivity (MS/m) / resistivity ($\text{m}\Omega\text{cm}$) / permeability (H/m) <i>Beta</i> / permittivity (F/m) <i>Beta</i>
Measurement range / accuracy	Depends on the measurement task, the material composition and the test object volume. Please consult the SURAGUS team
Device dimensions (w/h/d) / weight	30" x 12" x 26" / 760 mm x 310 mm x 660 mm / 20 kg
Further available measurements	Sheet resistance, metal thickness, anisotropy, optical transmittance, reflectance, haze

Device Control and Software

The screenshot displays the EddyCus TF Lab Control software interface. At the top, there is a menu bar with 'File', 'Measurement', and 'Info'. Below the menu bar is a toolbar with 'Measuring', 'TempOk', and 'CalOk' buttons, and the SURAGUS logo. The main interface is divided into several panels:

- Configuration: Drift Compensation:** Includes a 'Self Referencing' checkbox.
- Real Time Measurement:** Features a 'Mapping' grid with numerical values (e.g., 58, 69, 62, 57) and a 'Measurement Parameter' display showing '57.50 [Unit]'. Below the grid is a 'Set No of Digits' control with a value of '0.00' and a 'Unit Standard' label.
- Data Tracker:** A table listing measurement data with columns for 'Id', 'Time', 'Series N.', 'Value', and 'Unit'. The table contains 16 rows of data.