

EddyCus® TF lab 2020HF – High Frequency Thin Film Tester

P_T_2020HF_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 ($\text{mOhm}\cdot\text{cm}$)
- ▶ 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) consisting of electric and magnetic fields
- ▶ EMFs change when material with electric, dielect and (ferro)magnetic properties is present
- ▶ The evaluation of the resulting field changes provides information on amount / volume and its properties
 - ▶ Conductivity (e.g. metals, semiconductors, graphite)
 - ▶ Permeability (e.g. Co, Ni, Fe)
 - ▶ Permittivity (e.g. water, solvent, polymers, chemicals)
- ▶ The separation is done by complex impedance analysis

Device Characteristics

Measurement technology	Non-contact high frequency eddy current sensor
Substrates	Foils, glass, various containers
Substrate area	8 inch / 204 mm x 204 mm (open on three sides)
Max. sample thickness/ sensor gap	Transmission setup: 1 – 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 / resistivity ($\text{m}\Omega\cdot\text{cm}$) / 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	11.4" x 5.5" x 17.5" / 290 mm x 140 mm x 445 mm / 10 kg
Further available measurements	Sheet resistance, metal thickness, anisotropy

Device Control and Software

The screenshot shows the EddyCus TF Lab Control software interface. Key components include:

- Configuration:** Drift Compensation is set to Automatic. Self Referencing is selected.
- Data Tracker:** A table listing measurement data for a 'wafer series'.
- Real Time Measurement:**
 - Mapping:** A 5x5 grid with values:

	5	x	5		
			Add	Delete	Format
Left mouse click to move the selection, right mouse click to overwrite cell value without moving the selection					
	1	2	3	4	5
1	64	58	65	62	62
2	61	61	70	70	57
3	62	62	65	64	60
4	59	59	61	65	57
5					
 - Measurement Parameter:** 57.50 [Unit]
 - Set No of Digits:** 0.00
- Graph:** A line graph showing measurement data over time.