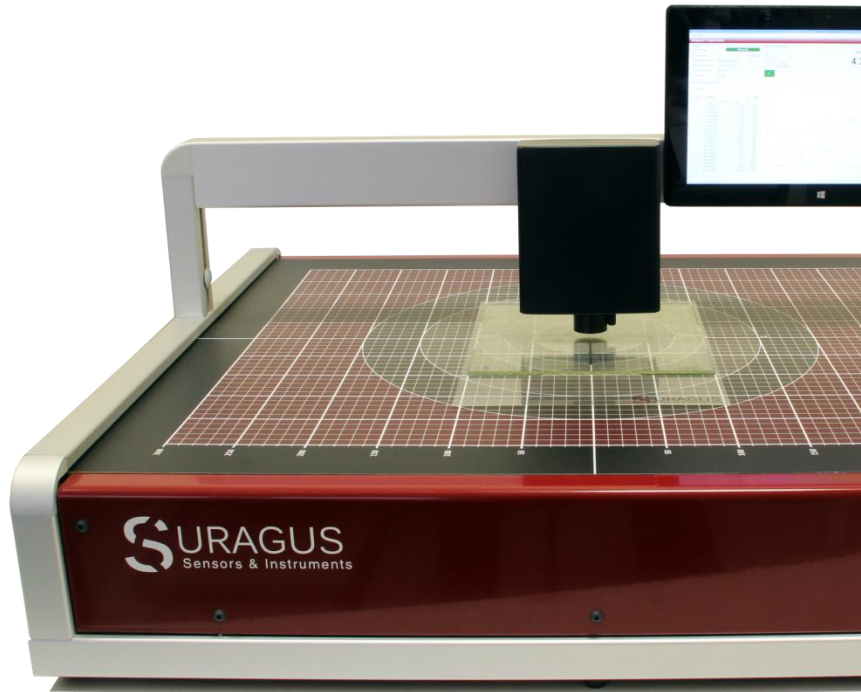


Non-contact Sheet Resistance Anisotropy Tester



DATA SHEET - EddyCus[®] TF lab 4040SR-A

HIGHLIGHTS

- Contact-free & real-time
- Accurate measurement of isotropic and anisotropic films
- Manual software guided mapping

INFORMATION

- > Sheet resistance (Ohm/sq)
 - > Machine direction (Ohm/sq)
 - > Traverse direction (Ohm/sq)
- > Anisotropy
 - > Ratio TD/MD
 - > Anisotropy (%)
- > Layer thickness of metal films (nm/ μm)
- > Metal foil thickness measurement [μm]

APPLICATIONS

- > Touch panel sensors & display
- > De-icing & heating applications
- > Batteries & fuel cells

TYPICAL MATERIALS

- > Nano-wires (Ag, Pt, Au etc.)
- > Metal meshes and grids (Cu, Au, etc.)
- > Carbon Nano Tubes
- > Nano-rods



DATA SHEET

EddyCus® TF lab 4040a – Sheet Resistance Tester

EddyCus® TF lab 4040a

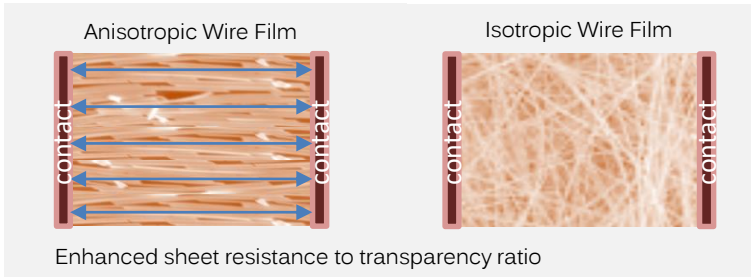
Sheet resistance measurement technology	Non-contact eddy current sensor
Substrates	e.g. foil, glass and wafer
Measurement surface area	29.5 x 26.5 inch / 750 x 650 mm (multi point measurement of 16 inch / 400 x 400 mm ² samples)
Max. sample thickness/sensor gap (defines distances)	1 / 2 / 5 / 10 / 25 mm (defined by the thickest sample/application)
Sheet resistance range (isotrope)	0.001 – 10 Ohm/sq; 2 % accuracy & 1 % repeatability 10 – 100 Ohm/sq; 3 % accuracy & 1.5 % repeatability 100 – 500 Ohm/sq; 4 % accuracy & 2 % repeatability
Anisotropy ratio	0.33 – 3
Thickness measurement of metal films (e.g. Cu, Al)	2 nm – 2 mm (in accordance with sheet resistance range)
Device dimensions (w/h/d)	30 x 12 x 26 inch / 760 x 310 x 660 mm
Weight	20 kg
Further measurements options	Isotropic sensors / Optical transmission at 632nm wavelength

ANISOTROPY TERM AND CONCEPT

- "Sheet resistance anisotropy" refers to a difference in electrical resistivity measured parallel and perpendicular to the machine direction
- Many wire and mesh structures can have an anisotropic sheet resistance

Electrical anisotropy...

- ...can be optimized according to the layout of the contact pattern
- ...can save material and improve optical transparency
- ...can be measured in contact or in non-contact mode by EddyCus TF lab 4040a or EddyCus TF inline anisotropy devices



ANISOTROPY DESCRIPTION

$$\text{Anisotropy Ratio} = \frac{R_{TD}}{R_{MD}} \quad \text{Anisotropy}[\%] = \frac{R_{TD} - R_{MD}}{0.5(R_{TD} + R_{MD})}$$



SOFTWARE & HANDLING – EddyCus TF lab Control

EddyCus® TF lab Control

SURAGUS
Sensors & Instruments

Status

Measuring TempOk CalOk

Configuration

Measurement Type: Sheet Resistance

Sample Size: 200 mm

Sample Thickness: 0 to 1 mm

Measurement Range: 0,1 to 200 Ω/sq

Selected Set: 200x0,1@SR

Real Time Measurement

Live Anisotropy: Absolute Relative Mean

Machine Direction

30,3 %

76,2 Ω/sq

Traverse Direction

69,7 %

175,1 Ω/sq

2,3

Anisotropy (Relative)

Automatic Set No of Digits: < 0.0 > Clear

Self Referencing

Data Tracker

Series Name: SilverNanoWire#7

Id	Time	Series Name	Value	Unit
✓ 1	11:13:43 AM	SilverNanoWire#1	8.77	Percent
✓ 2	11:14:49 AM	SilverNanoWire#2	10.39	Percent
✓ 3	11:15:21 AM	SilverNanoWire#3	23.35	Percent
✓ 4	11:15:35 AM	SilverNanoWire#4	18.23	Percent
✓ 5	11:15:52 AM	SilverNanoWire#5	27.21	Percent
✓ 6	11:16:08 AM	SilverNanoWire#6	27.71	Percent
✓ 7	11:16:39 AM	SilverNanoWire#7	4.24	Percent