COREMA – WT Specifications

1. Standard System

This system is recommended for GaAs and InP wafer evaluation

1.1 Mechanical Setup

Components

XY Translation Stage	200 mm x 200 mm
Chuck Diameters	two, diameters selected by customer
Deposition and centering	Semi-automatic pneumatic placement system
Probe Height Positioning	Automatic non-contact adjustment procedure

Specifications

Wafer Thickness	250 µm – 2000 µm
Wafer Diameter	2 inch to 200 mm
Chucks	up to 200 mm,
Lateral Thickness Variation	< 20 µm within area of 20 mm diameter
Sample Surface	Etched or polished, roughness below 10 µm
Translation Speed	40 mm/s max.
Repositioning Accuracy	10 µm

1.2 Measurement System

Components

Charge Amplifier	Specially developed
Digitizer	OEM
Pulse Generator	OEM

Specifications

Measurement Range	$1x10^6$ – $1x10^9$ Ohm*cm
Probe Size	1 mm diameter
Repeatability	Better than 1%
Edge Exclusion	2.5 mm
Resistivity Evaluation Time	270 ms @ 1E7 Ohm*cm, including 1 mm step translation time
Wafer Evaluation Time	20 min for 100 mm Ø wafer and 1.4 mm x 1.4 mm step size
Temperature Correction	Chuck based temperature measurement for resistivity normalization to specified temperature

1.3 Measurement Control

Components

Computer	Pentium PC with CD-RW and NIC – Microsoft Windows
Software	Custom Windows based program

Specifications

Operation	User-friendly menu-driven selection and control of measurement routines
Full Wafer Topogram	Maximum 1024 x 1024 data points
Rectangular Areas	Selectable sizes and positions, adjustable grid mapping
Local Measurement	Customer specified measurement plan
Line Scan	horizontal or vertical, diameter, radius

1.4 Data Reporting

Specifications

Measurement Protocol	User-friendly menu-driven routines
Topogram Display	Gray scale, color, and pseudo3D
Statistical Evaluation	Extensive, e.g. mean values, macroscopic variations, local variations, line scans, histograms etc.

2. Extended Range System

This system is recommended for wide bandgap material (SiC, GaN, CdTe)

It is equivalent to the standard system, however includes the following upgradings:

- ✍ Extended resistivity measurement range 1x 10^5 Ohm*cm – 1x 10^{12} Ohm*cm
- ✍ Special Probe height adjustment routine for material partly or totally above measurement range
- ✍ Light-tight hood for measurement in the dark to suppress persistent photoconductivity
- ✍ Evaluation routine for locally inhomogeneous material, to obtain the partial volumes of intermixed phases with different resistivities.

3. Options

Various upgrades and modifications of the design and performance parameters are available, including, customer specific chuck diameters and smaller probe sizes for increased lateral resolution. Note, however, that an individual modification may influence other performance parameters (e.g. a reduction of probe diameter may require a longer measurement time to achieve 1% repeatability). Complete performance specifications of upgraded systems will be supplied upon request.