

# **MX 601**

Contactless High-Ohm Wafer Resistivity Gauge

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### 1 Description

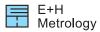
#### **Features**

- Resistivity of semi-insulating materials (GaAs, SiC, InP, GaN))
- Non-contact, capacitive measuring method
- · Fast, excellent repeatability
- No recalibration required
- PC-controlled via serial interface

The MX 601 measures the specific resistance of semi-insulating wafers like Gallium Arsenide.

It is not necessary to prepare a wafer for measuring, it is just placed on a hardcoated table and the cover is closed to keep out light. The wafer is chucked down by vacuum to effectively avoid piezo-electric effects. The vacuum is generated via a converter so that only a regular compressed air supply is required. A PC evaluates the data and then calculates and outputs the results. Using a computer has the added advantage that the calibration constants can be accessed, the output type can be changed, and statistical programs can be added.





### Measuring Principle

If a capacitor is constructed in such a way, that the semiconductor material to be measured constitutes the dialectric of that capacitor, the specific resistance (resistivity) can be determined if the dielectric constant (relative permittivity) is known, by measuring the cut-off frequency.

$$\rho = \frac{1}{\omega_0 \cdot \varepsilon} \left[ \frac{1}{\frac{1}{S} \cdot \frac{A \cdot S}{Vcm}} \right] = \left[ \Omega cm \right]$$

This theory is based on the formal analogy between the electric flux of the electric field and the current in the flow field (> K. Kuepfmueller 1984)

## **2 Technical Specifications**

| Measuring range                                 | 5 E+4 to 5 E+9           |         |
|---|--------------------------|---------|
| Wafer sizes                                     | up to 150                | m<br>mm |
| Sensor area                                     | Ø 10                     | mm      |
| Thickness range                                 | 350 µm to 650            | μm      |
| Measuring time                                  | max. 4 secs.             |         |
| Reproducibility                                 | ± 1%                     |         |
| (at constant ambient temperature, Std. 1 Sigma) |                          |         |
| Power supply                                    | 110 / 240 V, 50/60       | Hz      |
| Power consumption                               | 20                       | W       |
| Weight  | 10                       | kgs     |
| Dimensions                                      | (height x width x depth) |         |
| Electronics case                                | 150 x 250 x 270          |         |
| Table (MX 601-4)                                | 210 x 210                |         |
| Table (MX 601-6)                                | 360 x 210                |         |