



FOUR
DIMENSIONS

MODEL 333 SERIES

AUTOMATIC FOUR-POINT

PROBE SYSTEMS



Features

- Edge Defect Tolerant Automatic Wafer Alignment without Prealigner
- No Need of Robot for Transporting Wafers in C2C Operation
- Sturdy Automatic Probe-Head Switching
- No Endeffector Slot on the Chuck
- Option Available for Measuring Amorphous Si Film

Overview

This series consists of 3 models for 3 different function grades:

- a) Model 333A is the basic system
- b) Model 333AC is the system capable of handling wafers in cassette
- c) Model 333AF is the system with FOUP and mini-environment

Description

- a) The basic system, **Model 333A**, is for measuring sheet resistivities of thin layers such as metal film, ion implanted layer, epitaxial layer, raw wafers and poly Si film on wafer up to 300 mm in diameter. It is capable of mapping, custom-site measurement, making geometric and other corrections, doing repeatability tests, analyzing data and many others.

For this basic model, the operator is required to manually load and align the wafer on the chuck. Then the computer can take over the control of automatic measurements. One can also take quick measurements by pushing one or two buttons on the front panel.

The electronics in the instrument are composed of easily replaceable modules. The mechanical structure is laid out for no needle skid when probing the wafer. The instrument normally comes with two automatically switchable probe heads.

- b) There is no need of robot for **Model 333AC** to handle and test either 200 mm or 300 mm wafers from a cassette. It also has options of alignment without a prealigner. Thus spaces for the robot and the prealigner are eliminated; also the operator does not have to use another machine or manually change to a different probe head for testing a different kind of sample.
- c) **Model 333AF** is for testing wafers in FOUP cassettes. It has a FOUP opener and does not need a robot and a prealigner for wafer handling and alignment. A better than class 1 mini-environment for interfacing with the FOUP cassette.

Options for Special Functions Available

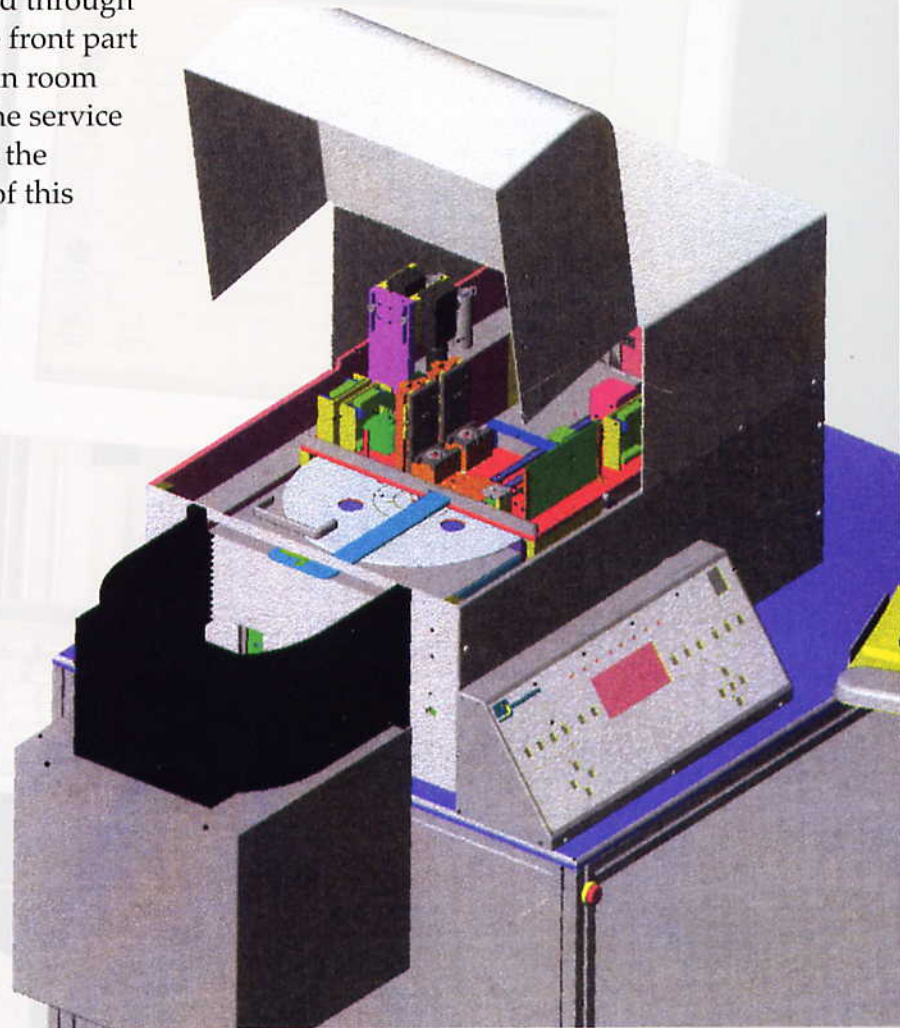
Measurement of Sheet Resistivity Up to $8 \times 10^{11} \Omega/\text{sq.}$
Testing Rectangular Plates
Statistic Process Control
SECS II
Temperature Compensation
Wafer Sorting
Trouble Shooting Kit
Factory Automation Software

Software Capabilities

- Millions of Data Set Storage
- Librarian Data Retrieval
- Trend Charts
- Geometric Corrections
- Individual Site Multipliers
- Push-Button Calibration
- Partial Wafer Mapping

Service Room & Clean Room Separation

The system can be installed through a dividing wall so that the front part of the system is in the clean room while the back part is in the service room, as one can see from the picture on the front page of this brochure.



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SPECIFICATIONS

Measurement:

Wafer Sizes Accommodated	333A—Any size up to 300mm 333AC & 3333AF—200,300mm (any size up to 300mm with manual handling)
Test Diameter	Up to 3mm from wafer edge
Quick-Checks	1, 5, 9 sites, 5, 6, 9, 10, 13 site ASTM/SEMI X-Patterns or custom sites
Cartesian Maps	Any site-Interval to nearest mm, up to 5000 sites
Polar Map Site Number	9, 25, 45, 49, 65, 81, 121, 169, 225, 289, 361, 441, 529, 625
Diameter Scans	Any site interval to nearest mm
Measurement Range	1m Ω /sq. to 800K Ω /sq. or 8E11 Ω /sq.
Measurement Units	Ω /sq., Ω -cm, V/I, t(μ), t(Å)
Measurement Repeatability	<0.2% (typical)
Electronic Accuracy	<0.1% (precision resistor)
Current Resolution	16 Bit A/D
Compliance Voltage for Measurement	125V

Computer System:

Computer Type	Pentium or Advanced PC Based System
Monitor Type	SVGA High Resolution Color
Printer Type	HP Color Deskjet
Data Transfer	RS-232, SECS I, II, LAN

Analysis Capabilities:

Automap Model 333 Software Under Windows:

- Color Contour Map
- 3D Surface Map
- P/N Type Testing
- Bulk Resistivity Measurement
- Statistical Process Control (SPC) Feature
- Trend Chart, by Wafer/Day/Month
- Diameter Scan
- Partial Wafer
- Numerical Data Printout
- Data Transfer to Spread Sheet/ASCII file
- Thickness, Temperature and Edge Correction
- Measurement Data Comparison

Facilities Requirements:

Power	100/115/230VAC, 50/60Hz, 200W, 1 kw
Vacuum	20 in. Hg

Probes:

Probe Spacing	1 mm (Standard)
Probe Force Range	60–150g (Standard)

TYPE	TIP RADIUS (W)	MATERIAL	APPLICATION
A	25	WC	Bulk, Thick Epi, Metals
B	100	WC	General
M	300	WC	Implant, Diffusion, Shallow Implant, Thin Epi Customized

Specifications as listed are subject to change without notice.



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