

Cascade PAV200

200 mm Semi-automated Vacuum Probe System

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➤ Overview

The Cascade PAV200 probe system from FormFactor is the ideal solution for automatic testing of wafers and substrates up to 200 mm in a high vacuum environment up to 10^{-5} mbar. It supports a wide temperature range from -60°C to 300°C .

It supports a wide range of applications, including DC and RF measurements, MEMS and opto-engineering tests. The probe platen is designed to mount probe cards or up to eight vacuum-type positioners on magnetic feet. A high-resolution video microscope with 50 mm x 50 mm travel range is mounted either on a microscope mount with swivel or on a microscope bridge for vibrationsensitive test applications and additional test instruments.



The PAV200 is equipped with a stable vibration isolating frame. The chuck and the motorized chuck stage with 200 mm x 200 mm X-Y travel, theta and Z-axis are located inside the high-vacuum chamber. Up to eight vacuum-type positioners can be easily operated from outside of the chamber via vacuum-tight mechanical feedthrough drives and cardan shafts. For the use under vacuum conditions, specially-designed thermal chucks with electrical and cooling line bulk-feedthroughs are available.

➤ Features / Benefits

Flexibility

- Different substrate carriers for wafers up to 200 mm or single dies
- Upstream pressure, downstream pressure or medium vacuum regulation
- Velox™ probe station control software
- Wide range of measurements (I-V, C-V, two-port, multi-port and differential RF)
- RF tests supported by a wide range of probes and calibration tools, such as calibration substrates and WinCal XE™ calibration software
- Accessories available, such as Black Bodies and optical motion analysis tools

Stability

- High accuracy, ideal for small structures
- Highly stable mechanics with a stable vibration isolation table

Ease of use

- Simple, straightforward design for easy and ergonomic operation
- Quick and ergonomic change of the DUT through front door

Automation

- Pressure control: up-stream, down-stream, high-precision capacitance vacuum gauges
- Bridge with rails for programmable movement of mounted instruments

High measurement

- Automatic control of chuck for fast step-and-repeat testing of the entire wafer throughput

> Applications

MEMS

Acceleration sensors

RF MEMS switches

Micro-bolometers

Gyro sensors

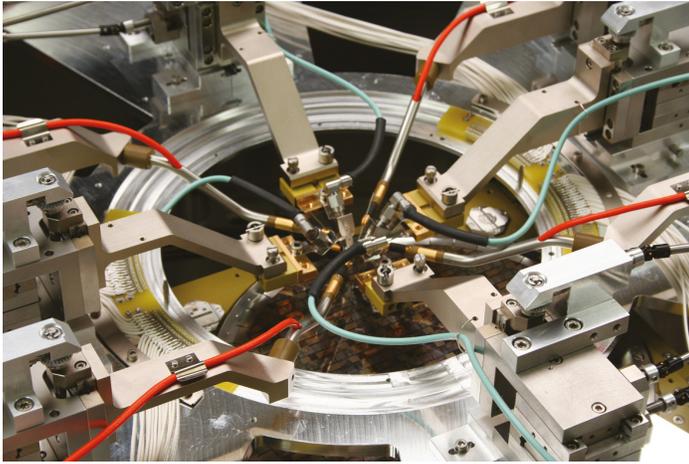
Gas sensors

Pressure sensors

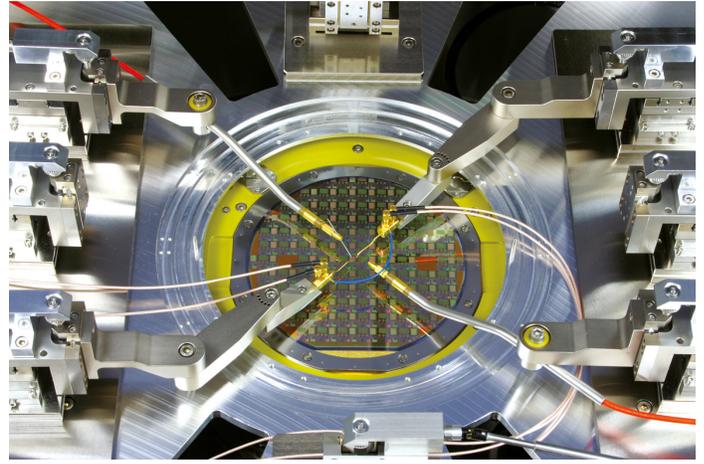
MOEMS

Micro-mirrors

Optical switches



Vacuum chamber with eight positioners (four RF, four DC).



Vacuum chamber with four DC positioners.

> Vacuum Probecard

Vacuum Probecard

Customer electronics on board possible

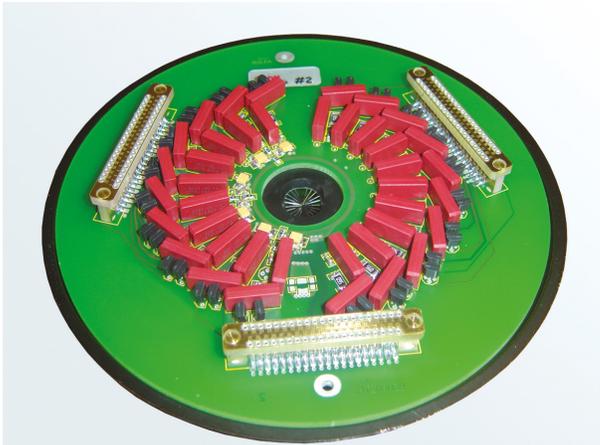
Easy-to-use probecard holder for fast change of probe card

Needle ring for up to 120 needles

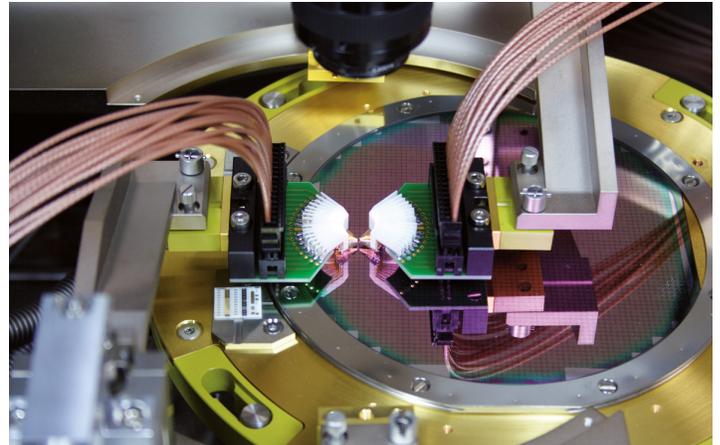
Coax and/or twisted-pair cabling

Pseudo Kelvin cabling – junction point at probecard holder

Alternatively, DC ProbeWedges™ can be used



Vacuum probe card.

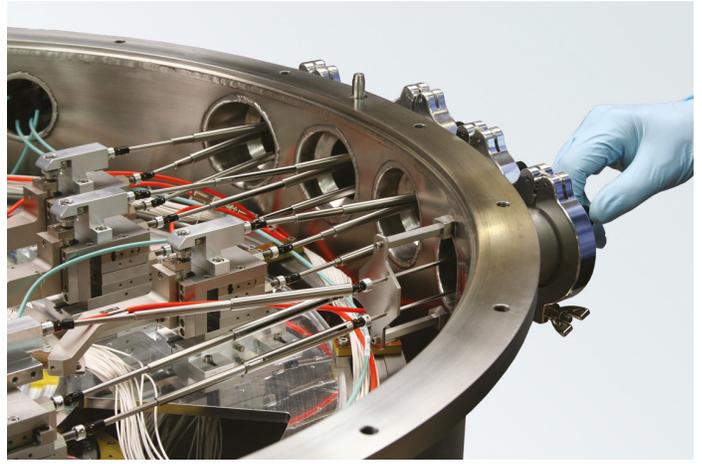


Two DC ProbeWedges on positioners.

> Handling



Wafer loading principle.



Probe positioning.

> Integration of Third-Party MEMS Test Tools

Polytec MSA-500

For out-of-plane and in-plane motion analysis and optional topology measurements

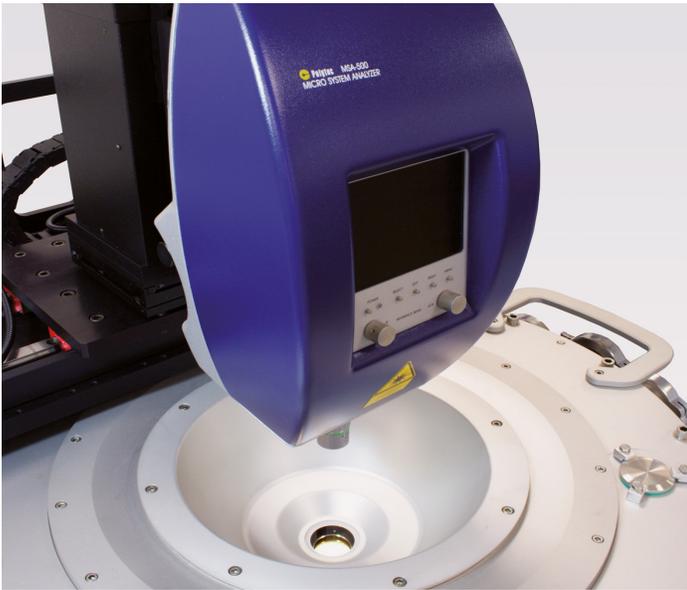
Seamless integration of both systems by Cascade Microtech and Polytec Communication Tool

Black bodies

For controlled exposure with infrared radiation for microbolometer testing

Cavity or surface type can be adopted

Aperture, filter and shutter functions are optionally available



Polytec MSA-500 over topside viewport for mechanical motion analysis.



PAV200 with Black Body for microbolometer testing.

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