

Cascade

# PAV200

200 mm Semi-automated Vacuum Probe System

000111100010

## Overview

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  $< 1 \times 10^{-4}$  mbar. It supports a wide temperature range from  $-60^{\circ}\text{C}$  to  $300^{\circ}\text{C}$ .

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

<b>Flexibility</b>	<ul style="list-style-type: none"><li>• Different substrate carriers for wafers up to 200 mm or single dies</li><li>• Upstream pressure, downstream pressure or medium vacuum regulation</li><li>• Velox™ probe station control software</li><li>• Wide range of measurements (I-V, C-V, two-port, multi-port and differential RF)</li><li>• RF tests supported by a wide range of probes and calibration tools, such as calibration substrates and WinCal XE™ calibration software</li><li>• Accessories available, such as Black Bodies and optical motion analysis tools</li></ul>
<b>Stability</b>	<ul style="list-style-type: none"><li>• High accuracy, ideal for small structures</li><li>• Highly stable mechanics with a stable vibration isolation table</li></ul>
<b>Ease of use</b>	<ul style="list-style-type: none"><li>• Simple, straightforward design for easy and ergonomic operation</li><li>• Quick and ergonomic change of the DUT through front door</li></ul>
<b>Automation</b>	<ul style="list-style-type: none"><li>• Pressure control: up-stream, down-stream, high-precision capacitance vacuum gauges</li><li>• Bridge with rails for programmable movement of mounted instruments</li></ul>
<b>High measurement</b>	<ul style="list-style-type: none"><li>• Automatic control of chuck for fast step-and-repeat testing of the entire wafer throughput</li></ul>

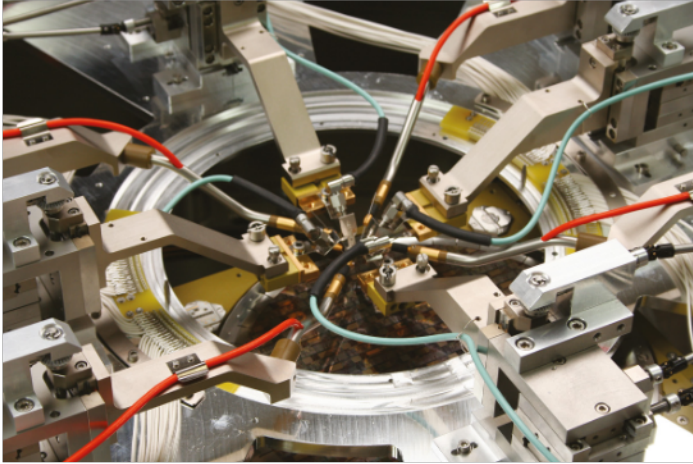
## > Applications

**MEMS**

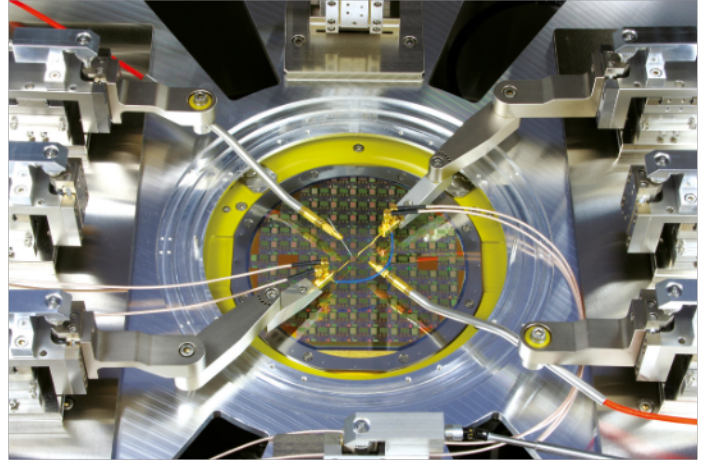
- Acceleration sensors
- RF MEMS switches
- Micro-bolometers
- Gyro sensors
- Gas sensors
- Pressure sensors

**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

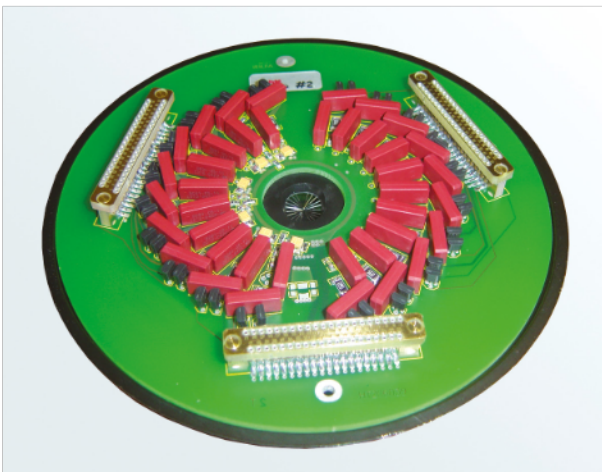
Easy-to-use probecard holder for fast change of probe card

Needle ring for up to 120 needles

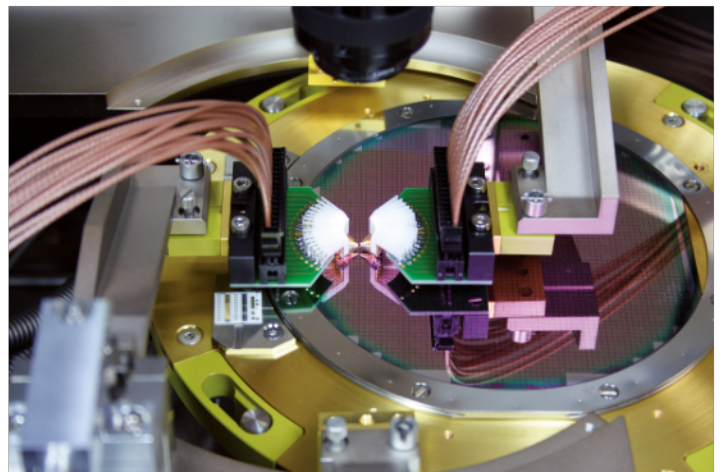
Coax and/or twisted-pair cabling

Pseudo Kelvin cabling – junction point at probecard holder

Alternatively, DC ProbeWedges™ can be used



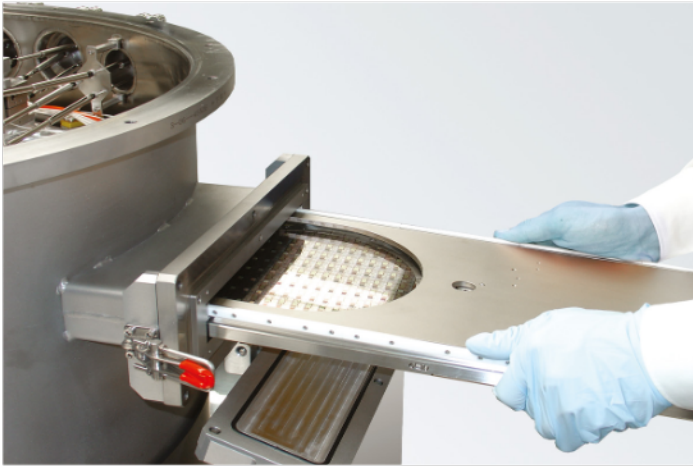
Vacuum probe card.



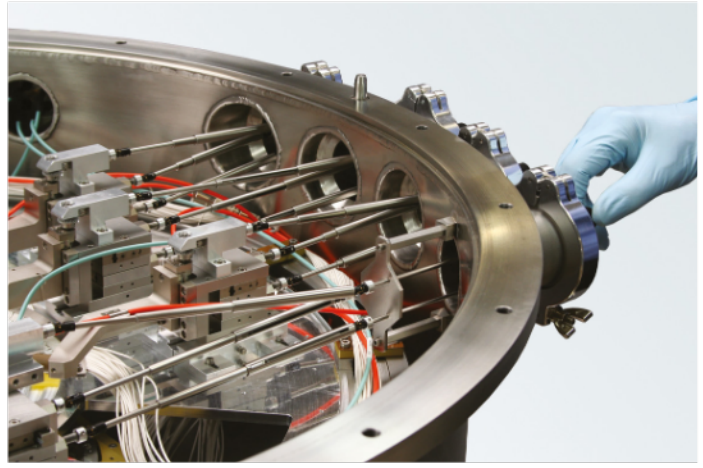
Two DC ProbeWedges on positioners.



## > 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

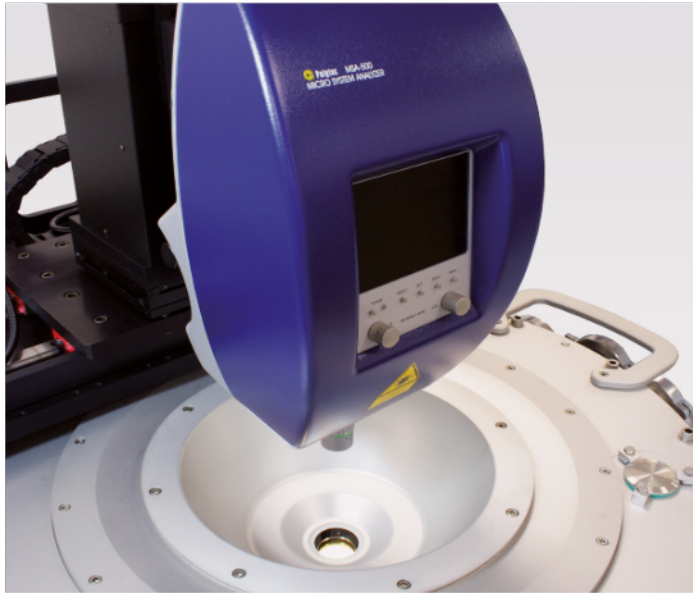
Seamless integration of both systems by Cascade Microtech and Polytec Communication Tool

### 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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