

# Cascade PAV200

## 200 mm Semi-automated Vacuum Probe System

### ➤ 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

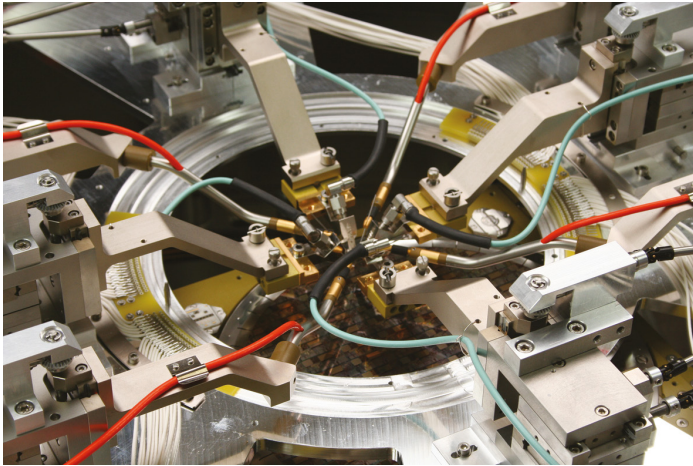
Gas sensors

Pressure sensors

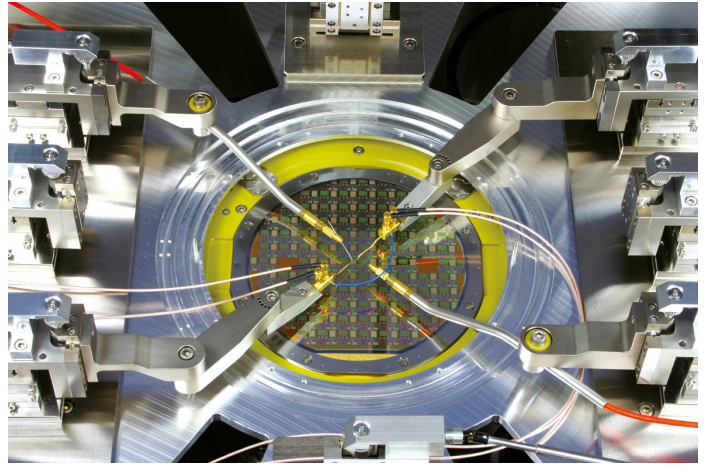
### MOEMS

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

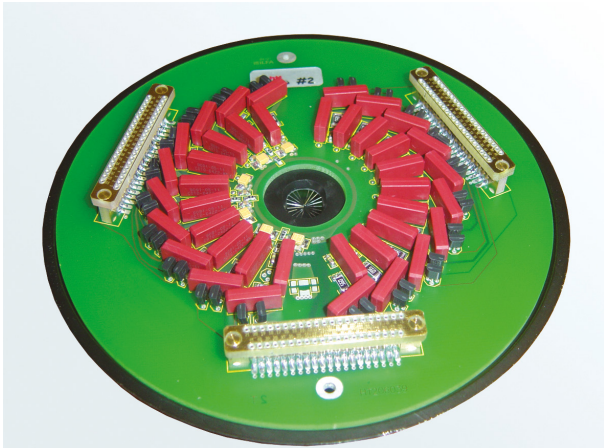
Easy-to-use probecard holder for fast change of probe card

Needle ring for up to 120 needles

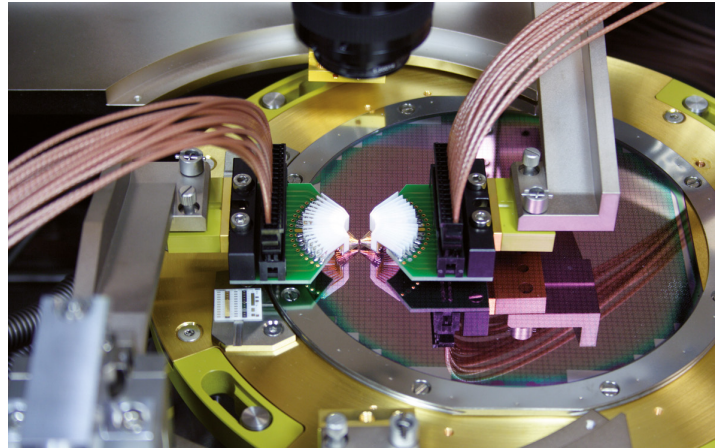
Coax and/or twisted-pair cabling

Pseudo Kelvin cabling – junction point at probecard holder

Alternatively, DC ProbeWedges™ can be used



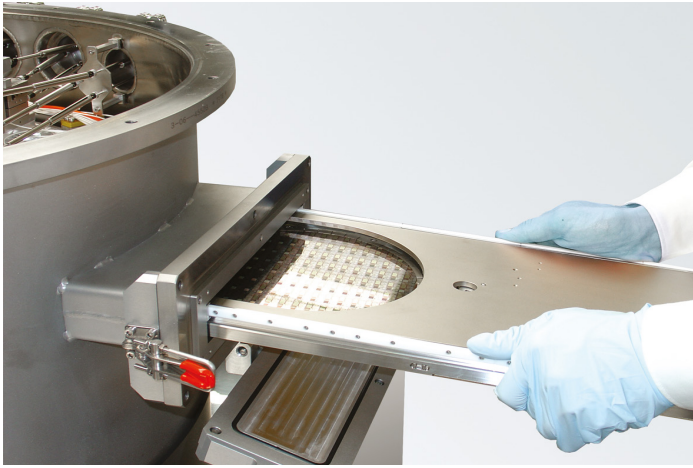
Vacuum probe card.



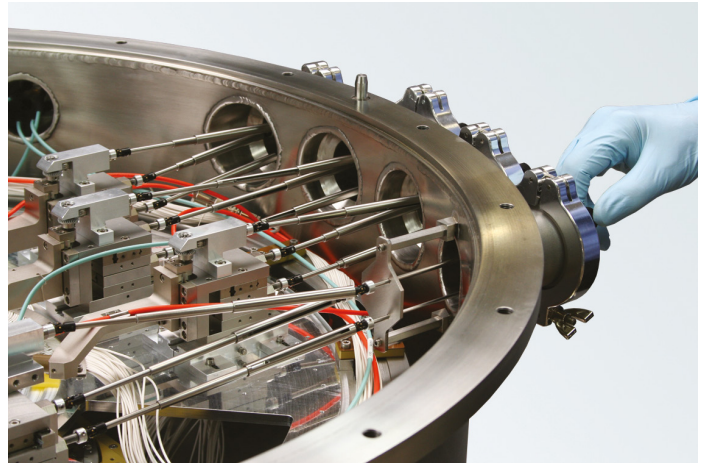
Two DC ProbeWedges on positioners.



## > 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

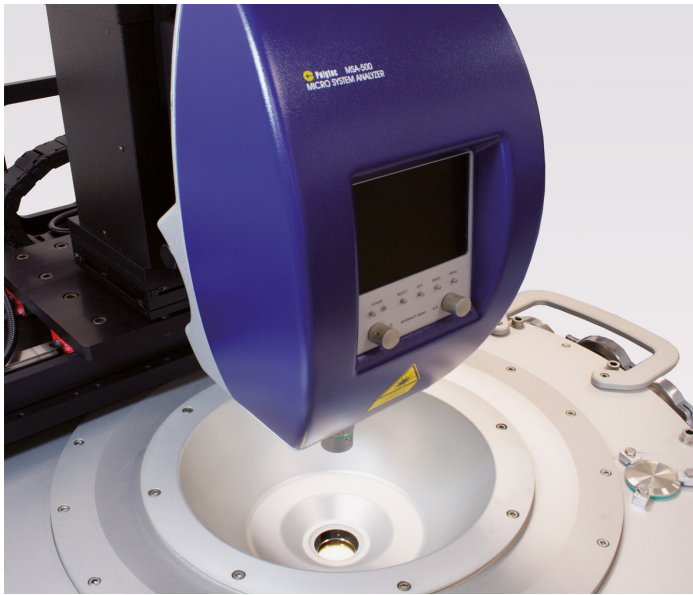
Seamless integration of both systems by Cascade Microtech and Polytec Communication Tool

### 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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