

PMV200

200 mm Manual Vacuum Probe System



DATA SHEET

The PMV200 is the ideal solution for testing wafers and substrates up to 200 mm in a vacuum environment. Specially designed for laboratory requirements, it supports a wide range of applications, such as I-V, C-V and RF, and can be used for probing under high vacuum up to 10^{-5} mbar. Application flexibility is ensured for DC and RF measurements, MEMS and opto-engineering tests.

The base of the PMV200 is a vibration isolated mainframe. The chuck and the chuck stage with 200 mm x 200 mm X-Y travel, theta and separation stroke are located inside the high-vacuum chamber that contains flanges for vacuum-tight mechanical feedthrough drives. Thus, the chuck and up to eight vacuum-type positioners can be easily operated from outside of the chamber via cardan shaft. Different exchangeable window flanges are available for different working distances between the microscope objective and the wafer. The high-vacuum pump stand with turbo-molecular-pump (TMP) can be combined with upstream, downstream and medium-vac pressure control.

The probe platen, which is divided into two parts, is designed to mount probe cards or up to eight vacuum-type positioners on magnetic feet. Both DC and RF positioners can be used. A high-resolution video microscope with 50 mm x 50 mm travel range is mounted either on a microscope bridge for vibration-sensitive test instruments or on a remote controlled lift.

The PMV200 can be customized with a number of instruments, including various video microscopes, laser cutters and optical motion analysis tools, such as Polytec's MSA systems. Specially designed thermal chucks with electrical and coolant bulk feedthrough are available for use under vacuum conditions. The PMV supports a wide temperature range from -60°C to 300°C .

FEATURES / BENEFITS

Flexibility	System is customized to users' requirements Different substrate carriers for wafers up to 200 mm or single dies Upstream pressure, downstream pressure or medium vac regulation Wide range of measurements (I-V, C-V, RF) Accessories available, such as laser cutters and optical motion analysis tools
Stability	High accuracy, ideal for small structures Highly stable mechanics, 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
High measurement throughput	Independent control of chuck and positioners for fast step-and-repeat testing of the entire wafer

SPECIFICATIONS*

Wafer / Substrate Size	200 mm (round or square)
X, Y, Theta Shuck Stage	
Resolution	5 μm
X-Y travel	200 mm x 200 mm
Load stroke Y axis	100 mm
Z contact / separation stroke	5 mm
Theta travel (standard)	$\pm 3^\circ$
Positioners	
Type	Up to eight vacuum-type positioners with universal joints
Probecard	
Type	Round 6 inch or 4.5 inch x 7/11 inch
Chuck Types	
Wafer chuck	100 mm, 150 mm or 200 mm
Universal chuck	Small dies, wafer fragments, 1 inch / 2 inch / 3 inch wafers
Thermal chuck	-60°C to 300°C
High-/Medium-Vacuum Pumping System	
Maximum vacuum	10 ⁻⁵ mbar
Pump types	Forepumps: diaphragm or scroll pumps High-vacuum: turbo-molecular drag pumps
Vacuum gauge	Full range Pirani / cold-cathode or precision capacitance gauge(s)
Manual Microscope Support (Swivel Mechanism / Linear Bridge)	
Travel range	50 mm x 50 mm
Z travel	Large motorized Z stroke or 50 mm manual focus drive and pneumatic lift-off
View Port	
Diameter	60 mm
Material	Quartz glass (others on request)
Working distance	30 mm, 50 mm or 80 mm
Microscope	
Type	Video zoom microscope (optional: FS70 or custom instruments)
Zoom range	12x
Magnification	1.16x - 14x
Resolution	9 μm - 2 μm

*Data, design and specification depend on individual process conditions and can vary according to equipment configurations.
Not all specifications may be valid simultaneously.

PHYSICAL DIMENSIONS

Width x Depth x Height	1100 mm x 1500 mm x 2000 mm
Weight	650 kg (without chiller unit)

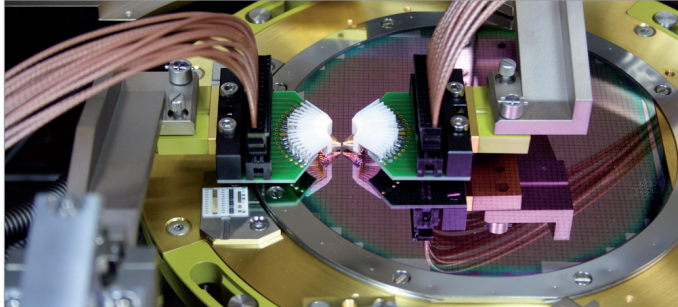
APPLICATIONS

MEMS / MOEMS

Acceleration sensors
RF-MEMS switches, resonators
Microbolometers
Yaw rate sensors / gyro sensors
Gas sensors
Micromirrors / optical switches

Next Generation Technologies

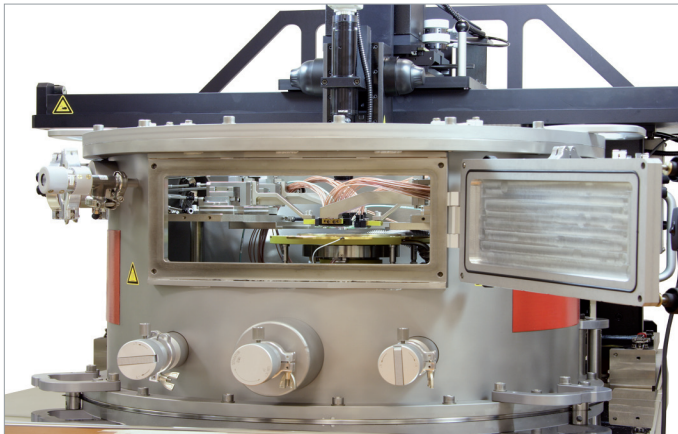
OLEDs
Nanotechnology



Test of a MEMS wafer with two Multi DC ProbeWedges™.

HANDLING

All knobs located outside of the chamber ensure easy and precise control of the chuck stage and positioners. The hinged front door enables quick and ergonomic loading and unloading of your DUT. The chamber lid allows easy probe configuration and probe tip exchange.



The large front door enables quick and ergonomic loading and unloading of the DUT. The chuck and up to eight vacuum-type positioners can be easily operated from outside of the chamber via universal joint drivers.



View through the view port of the chamber lid. The shown configuration consists of four RF IZI Probes® and four DC probes.

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Data subject to change without notice.

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