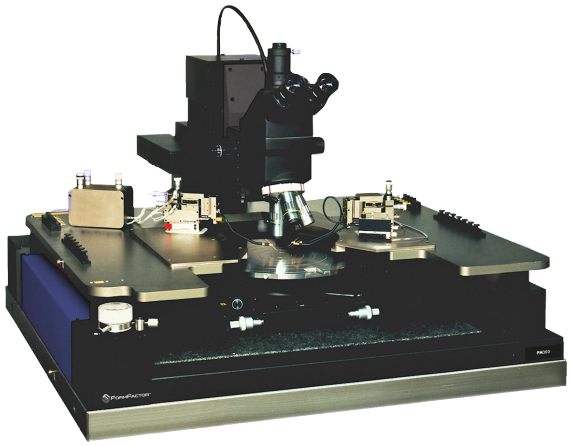
Cascade

PM300

300 mm Manual Probe System

Overview



Cascade PM300 probe system from FormFactor is the ideal solution for engineering tests of 300 mm wafers and substrates. Whatever your application, the versatility of the PM300 meets all requirements from failure analysis (FA) to device and wafer characterization (DWC) to wafer-level reliability (WLR) testing and always ensures the highest accuracy. With the optional square chuck, the PM300 can be also used for testing of flat panel displays.

The superior mechanics of the probe system are the basis for stable and precise system setup regardless of your application. The X and Y axes of the chuck stage can be moved easily and individually for fast coarse adjustment. Each axis has been designed with an individual magnetic lock and a vacuum brake that enables the fine glide chuck stage to be exactly positioned whenever you release the button. Fine adjustment is ensured for X and Y by high-precision micrometers.

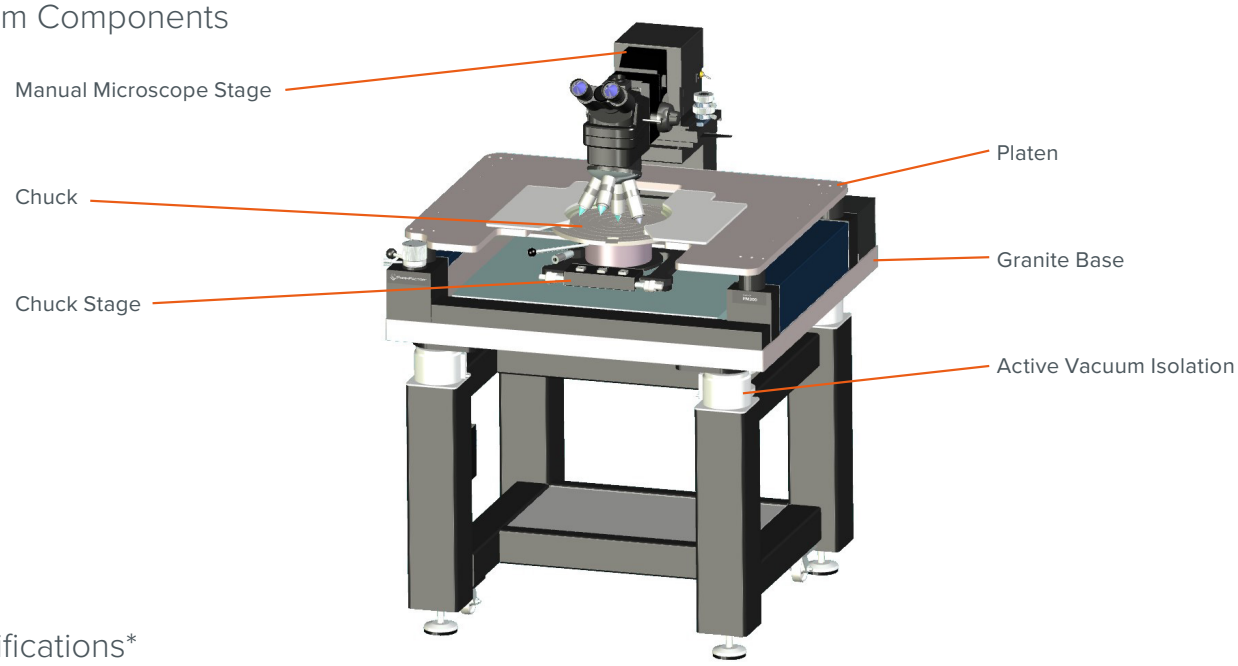
The PM300 has been designed with the user in mind. You can start out with the basic setup of the PM300 and the system is scalable to meet your expanding test requirements. For example, light-sensitive measurements in a ShieldEnclosure™, thermal chucks or various high-frequency test setups up to mmW are available.

Features / Benefits

Flexibility	• Flexible design for engineering tests • Easy changeover between different applications • Ideal for failure analysis, DWC and WLR applications • Wide range of accessories available, for example ShieldEnclosure SE1200 • Thermal chucks (only hot) and eVue IV digital imaging system available
Stability	• Superior mechanics for highest degree of stability
Ease of use	• Quick and easy system set up • Independent, coarse movement of X and Y axes • Easy fine adjustments through high-precision micrometers located on frontside of chuck stage • Independent magnetic locks and vacuum brakes for X and Y axes • Ergonomic low-profile design

Note: For physical dimensions and facility requirements, refer to the PM300 Facility Planning Guide.

System Components



Specifications*

Chuck Stage	
Range of movement	X, Y, theta
Coarse adjustment	300 mm x 300 mm
Fine adjustment	10 mm x 10 mm (63.5 tpi)
Load stroke	10 mm
Theta travel	± 8°

Manual Microscope Stage	
Travel Range XY	50 x 50 mm or 100 x 100 mm
Resolution	< 5 µm
Scope Lift	Pneumatic
Travel Range Z	130 mm

Platen	
Platen space	DC Platen: For up to eight / DPP2xx / DPP3xx positioners or up to 12 DPP105 positioners RF Platen: For up to 4 RPP305 positioners
Z-travel	40 mm
Contact and separation travel	0.4 mm
Platen Cooling	optional

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

Vibration Isolation Table

Type	Granite base with active vibration isolation system
Planarity of granite slab over entire range of movement	< +/- 2.5 µm
Damping of Active Vibration Isolation system	> 10 db @ 1 Hz to 10 Hz, > 20 dB @>10 Hz

Utilities

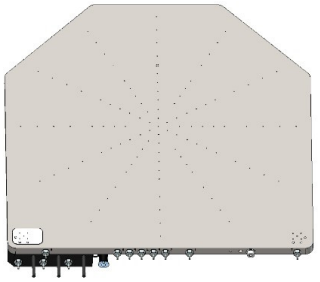
Power	115 / 230 V, 50 / 60 Hz
Vacuum	- 0.8 bar
Compressed air	6 to 10 bar

Wafer Chuck

Standard Wafer Chuck

Material	Stainless steel
Chuck surface	Planar with vacuum rings
Supported DUT sizes	Wafer sizes from 100 mm to 300 mm, vacuum sections manually selectable
Surface Planarity	+/- 5 µm

RF Wafer Chuck



Material	Stainless steel
Chuck surface	Planar with 0.7 mm diameter vacuum holes
Surface Planarity	< +/- 5 µm
Aux Chucks	Two Aux sites integrated into chuck, one Aux site with ceramic inlay optimized for calibration, including stop pins as alignment aid
Vacuum sections / Supported DUT sizes	(1) 4 holes arranged in 1.4 x 1.4 mm square for shards (2) Center, 20 mm, 42 mm diameter (3) 66, 88 mm diameter (100 mm wafers) (4) 110, 132 mm diameter (150 mm wafers) (5) 176 mm diameter (200 mm wafers) (6) 210, 242, 275 mm diameter (300 mm wafers) (7) Aux site 1, 4 holes arranged in 8 x 7 mm square, one in center (8) Aux site 2, 4 holes arranged in 8 x 7 mm square, one in center
Isolation	> 2 GOhm

Thermal Chucks ATT

Temperature Range	+25°C to +200°C	+15°C to +200°C
Extended Temperature Range (option)*	+25°C to +300°C	+15°C to +300°C
Components	Chuck, controller	Chuck, controller, cooling booster
Temperature Stability	+/- 0.1 °C	+/- 0.1 °C
Temperature Accuracy	+/- 0.5 °C	+/- 0.5 °C
Heating Rate 25°C to +200°C	< 12 min	< 12 min
Cooling Rate	< 25 min (200°C to +30°C)	< 25 min (200°C to +25°C)
Temperature Uniformity	<0.5 K /0.5%	<0.5 K /0.5%
Isolation	> 2 TOhm	> 2 TOhm
Planarity	< +/- 10 µm	< +/- 10 µm

Available Microscopes

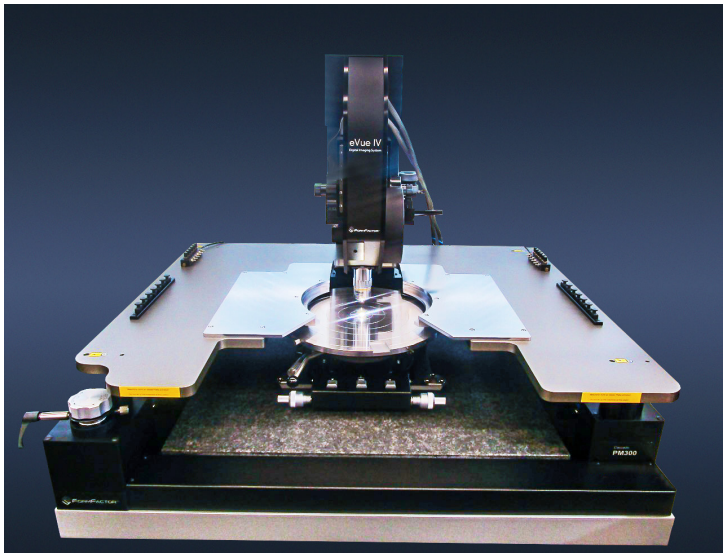


Figure 1: PM300 with eVue IV Microscope

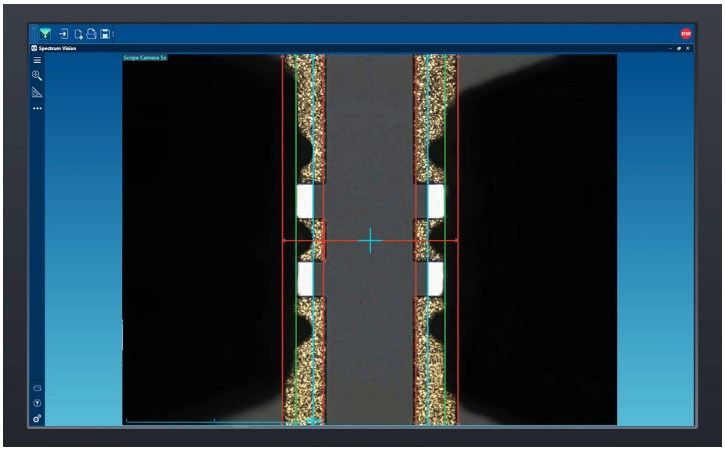


Figure 2: Velox for Manual Stations.

	eVue IV 10x	eVue IV 40x	SlimVue	Mitutoyo FS70
Eye pieces	-	-	Yes	Yes
Camera	Included	Included	Optional	Optional
Illumination	LED Light	LED Light	Coaxial LED	Fibre Optics
Auto Focus	Optional (ProPackage)	Optional (ProPackage)	–	–
MultiView	2 screens (ProPackage option)	3 screens (ProPackage option)	–	–
Zoom	0.5 – 5.0	0.5 – 20		
FOV max. (10x Objective)	2.62 x 1.97 mm	2.62 x 1.97 mm	3 mm Ø	2.4 Ø
FOV min. (10x Objective)	0.26 x 0.2 mm	0.07 x 0.05 mm	0.75 mm Ø	1.2 mm Ø
Available Objectives**	Mitutoyo M Plan APO 2X, 5X, 10X, 20X			

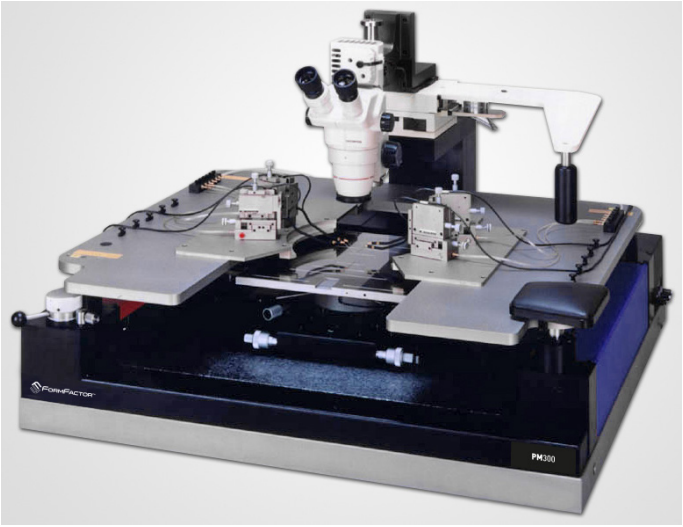
**Further Microscopes available upon request*

***Further Objectives available upon request*

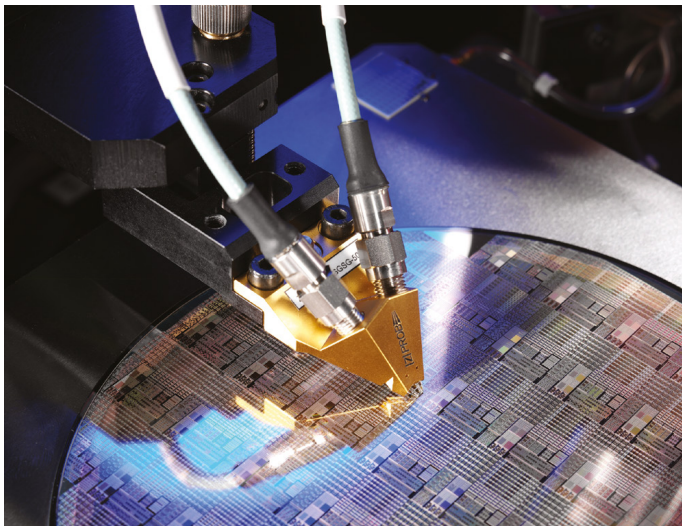
Options

Feature	Description
USB Camera Kit with Velox	USB Camera mounted via C-mount on microscope including Velox Probe Station Control Software for Manual Probe Stations. Requires PC.
USB Camera kit	USB Camera mounted via C-mount on microscope, including 24 inch monitor and mouse. File transfer via SD card or PC connection (PC not included)
Dark Box / Shield Enclosure SE1200EMC	Light-tight, electrically grounded, optimized design for EMC shielding

Applications



PM300 with square chuck for failure analysis of FPDs.



RF setup with Dual |Z| Probe® on PM300.

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