



The ultimate tool  
for 300 mm device characterization  
and reliability test

# PA300PS

## 300 mm Semi-automatic Probing System

The PA300PS is the world's best device characterization tool, combining excellent positioning accuracy with excellent measurement accuracy for device modeling and wafer level reliability (WLR) tests.

The unique design of the PA300PS is enhanced with ProbeShield® technology, providing a fully electromagnetically shielded, ultra low-noise, light-tight environment. This means your measurements are more accurate, resulting in more efficient model extraction, faster model turnaround and less design iterations, faster time to market and ultimately a higher return on investment on your devices. In order to fully implement a sound EMI/RFI shield, all high-precision DC servos are shielded by ProtecDrive™ and augmented automatically with QuietMode™, which safely removes all power to servos, motorized ProbeHeads™ and the motorized microscope movement to prevent any degradation of the spectral noise floor.

Since the PA300PS has been designed to provide best-in-class measurements, it is easy to integrate the sensitive measurement equipment inside the shielded environment of the ProbeShield system. This significantly reduces cable lengths, which increases measurement dynamic, and eliminates the need for an additional, expensive shielded room for measurements such as low-frequency flicker (1/f) noise.

Handling fragile and expensive wafers is easy with the patented PA300PS loading mechanism. While the chuck and integrated CeramPlate™ stay inside the system, a loading plate smoothly glides out to comfortably load substrates and/or wafers. By using a small opening for loading and unloading, we minimize the pollution of the test environment with warm, moist air. Reconditioning after wafer change starts immediately without requiring additional time for purging the system with dry air. Since the sensitive CeramPlate stays in the system, damage or contamination is minimized, significantly reducing repair and maintenance costs.

## FEATURES AND BENEFITS

<b>Efficient model extraction with highly accurate parameter measurements</b>	<p>Low-noise test environment with advanced EMI-shielding concept and CeramPlate, which eliminates thermal chuck's interference</p> <p>AccuraCV™ and SussCal® control of 4294A provide accurate high-k, thin oxide C-V characterization</p> <p>Unique measurement equipment integration with shortest cable lengths for best measurement dynamic and accuracy</p> <p>1/f set-up with ProPlus NoisePro eliminates need for additional shielding room and provides best-in-class measurement accuracy</p> <p>LRM+™ and RRMT+™ for accurate wafer-level calibration</p>
<b>Automated generation of modeling and reliability data</b>	<p>Unattended test at different temperatures (-60°C to +300°C) with Automated Thermal Management™ and optional ReAlign™ for thermal shift compensation</p> <p>Automated calibration substrate alignment</p> <p>Interfaces with all leading data acquisition and modeling software</p> <p>Extended microscope movement and multi-site, high-temperature probe cards for reliability parallelization</p>
<b>Fine-pitch probing on small pads</b>	<p>Best-in-class mechanical precision for accurate positioning</p> <p>Highest Z accuracy for reducing skating of probe needles on pads</p>
<b>Easy and safe operation</b>	<p>Unique handling of probe cards and ProbeHeads:</p> <ul style="list-style-type: none"> <li>Patented ContactView™ and ProbeHorizon™ options for easy and safe contact setting</li> <li>Integrated probe card holder - no mechanical change over</li> <li>Simultaneous use in EMI-shielded environment</li> </ul>

## SPECIFICATIONS\*

### General Features

Substrate sizes	Single chips to 300 mm wafers
Temperature range	-60°C to 300°C
Automated temperature test	ReAlign (optional), Automated Thermal Management

### Chuck Stage

<b>X-Y Movement</b>	Closed-loop, DC servo with linear encoder feedback
Travel / Resolution	305 mm x 305 mm / 0.5 µm
Repeatability	± 1 µm
Accuracy	± 2 µm
Planarity	± 15 µm
Maximum speed	50 mm/sec
<b>Z Movement</b>	DC servo with rotary encoder feedback
Travel / Resolution	12 mm / 0.25 µm
Repeatability	± 1 µm
<b>Theta Movement</b>	DC servo with rotary encoder feedback
Travel / Resolution	7.5° / 0.0001°

### Programmable Microscope Movement

	Closed-loop, DC servo with rotary encoder feedback
Travel / Resolution	50 mm x 80 mm (iVista™, A-Zoom) / 0.25 µm
Access lift	130 mm motorized

### Utilities

Vacuum	Less than 200 mbar abs
Dry air	6 <sup>-10</sup> bar; dewpoint lower than - 65° C; maximum flow rate 180 liters/min at SATP (depending on system configuration)
Power	100/240 V, 50/60 Hz, maximum 1500 VA (depending on system configuration)

\*Data, design and specification depend on individual process conditions and can vary according to equipment configurations.

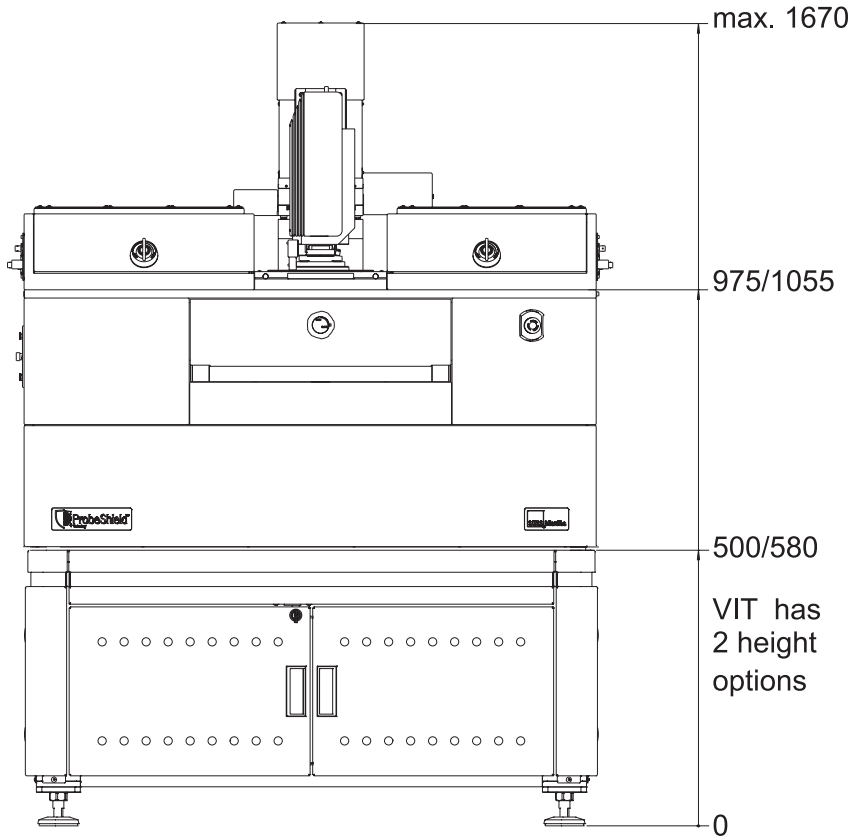
Not all specifications may be valid simultaneously.

## PHYSICAL DIMENSIONS

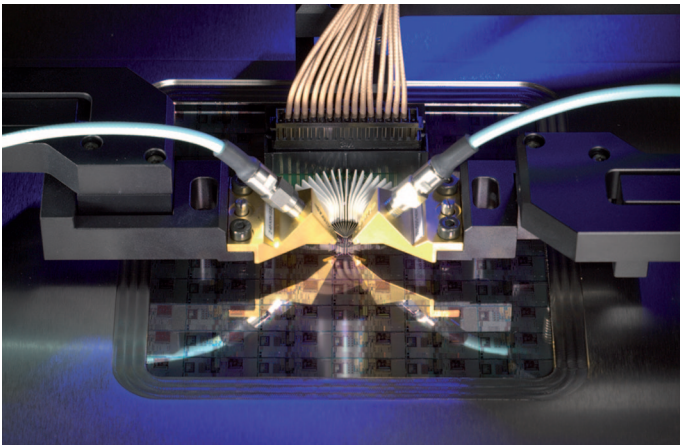
Weight

Maximum 1000 kg (depending on system configuration)

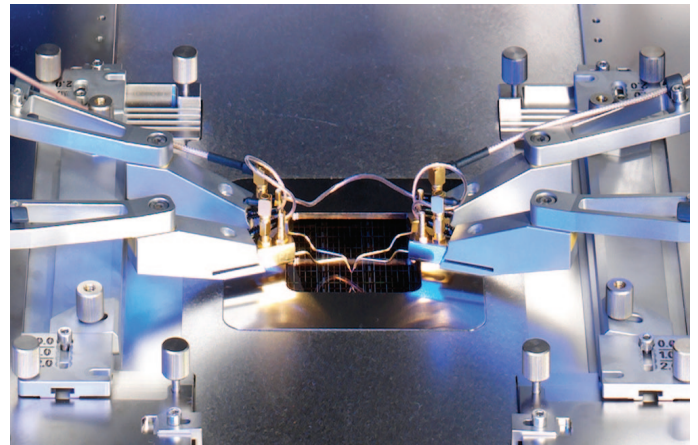
Dimensions (mm)



## APPLICATIONS



Device characterization in an EMI-/RFI-shielded environment using the |Z| Probe® and ProbeWedge™.



Setting up complex measurements such as pulsed I-V no challenge with the advanced ergonomic design of the PA300PS.

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Data subject to change without notice

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