

## Cascade **Probe Positioners**

DC, RF and Optical Probe Positioning  
for Highest Accuracy Measurements



## DC, RF and Optical Probe Positioning for Highest Accuracy Measurements



Highest accuracy with backlash-free positioning

Drift-free measurements over temperature and time\*

Easy, and safe swapping between arms

Best signal integrity using optimized probe cabling systems

Full thermal capability\*

Manual or programmable

FormFactor offers a wide variety of manual and motorized probe positioners for any application from DC to terahertz measurements and beyond.

Engineered for high stability and accuracy, FormFactor's positioners enable precise, backlash-free and repeatable probe tip placements - from simple IV/CV measurements to highly challenging measurement tasks.

Enhanced with FormFactor's **High Thermal Stability (HTS)**, the positioners become part of our exclusive **Contact Intelligence™ Technology** that enables small pad probing over a full temperature range of -60°C to 300°C.

Unsurpassed accuracy and highest productivity is achieved with the revolutionary **Autonomous Measurement Assistants** for DC, RF and Silicon Photonics testing. These wafer probing assistants utilize our programmable positioners and enable fully

autonomous, hands-free measurements – minimizing training needs and accelerating time to market.

Designed and validated with proven quality standards, our positioners are always the perfect match to your FormFactor probe system.

### Application Flexibility

- / Device Characterization and Modeling
- / Ultra-low Noise Measurements (1/f)
- / RF, mm-Wave and Terahertz Measurements
- / High Power Test
- / Failure Analysis
- / Silicon Photonics Measurements
- / MEMS Test

\*With High Thermal Stability (HTS).

## Manual DC Probe Positioners

### DPP105

<b>Probe technology</b>	Use with PTT DC probe needles
<b>Feature resolution</b>	5 μm
<b>Travel range (X/Y/Z)</b>	8 / 6 / 25 mm
<b>Mounting</b>	Vacuum, magnetic
<b>Footprint (WxD)</b>	60 mm x 20 mm
<b>Applications</b>	Basic IV probing Ideal for applications that require more than eight positioners

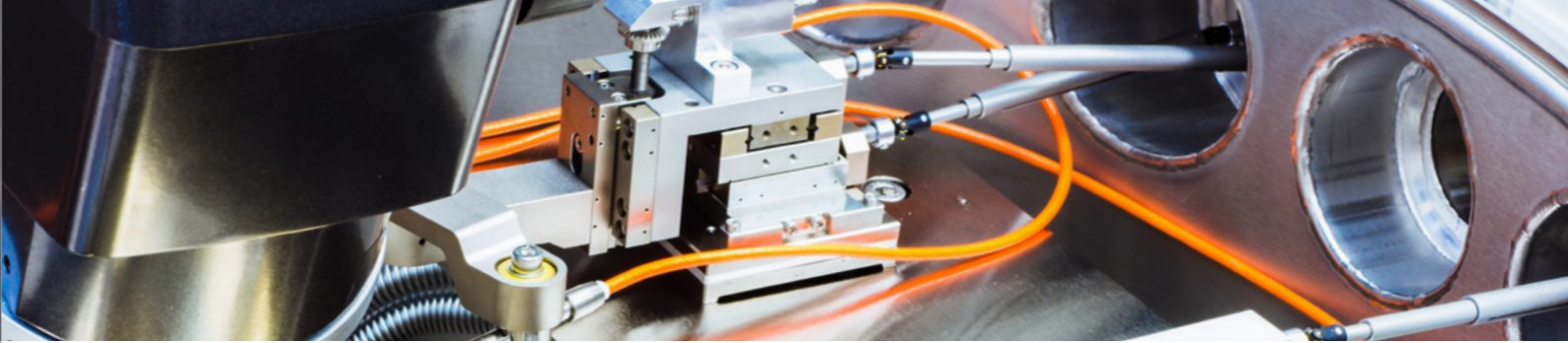
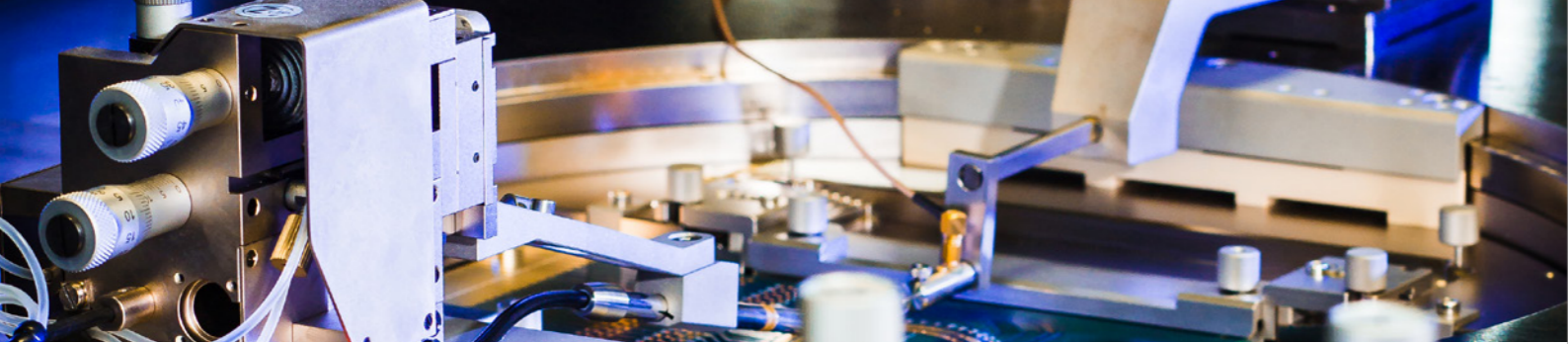


### DPP205 / DPP210 / DPP220

<b>Probe technology</b>	Use with DCP high performance DC probes
<b>Feature resolution</b>	<2 μm (DPP205) / <1 μm (DPP210) / 0.5 μm (DPP220)
<b>Travel range (X/Y/Z)</b>	12.5 / 12.5 mm / 12.5 mm
<b>Mounting</b>	Vacuum, magnetic
<b>Footprint (W x D)</b>	90 mm x 60 mm
<b>Application</b>	IV/CV probing Failure analysis



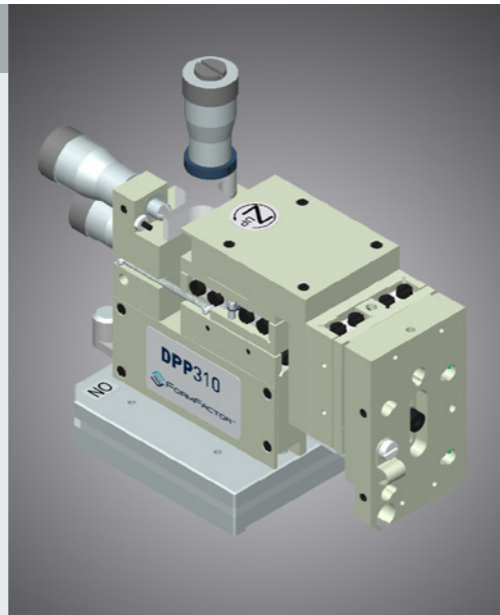
For station compatibility see last page. For detailed specifications see the Probe Station Accessory Catalog.



## Manual DC Probe Positioners (Continued)

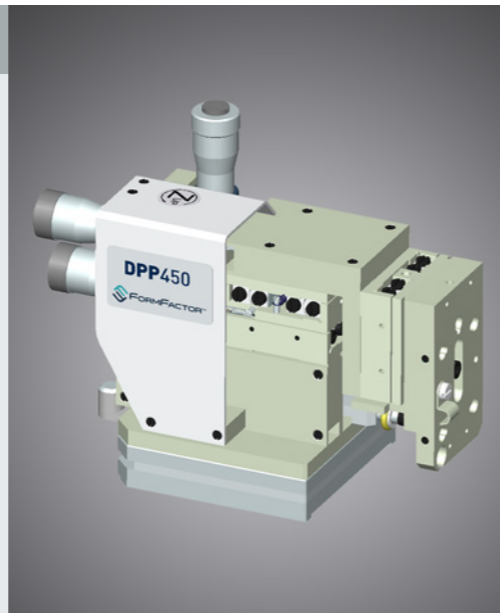
### DPP305 / DPP310

<b>Probe technology</b>	Use with DCP high performance DC probes
<b>Feature resolution</b>	0.5 μm
<b>Travel range (X/Y/Z)</b>	10 mm / 10 mm / 8 mm
<b>Mounting</b>	Vacuum, magnetic
<b>Footprint (WxD)</b>	75 mm x 50 mm
<b>Applications</b>	High-precision and high-resolution probing High-performance IV/CV probing and failure analysis Internal node probing



### DPP450

<b>Probe technology</b>	Use with DCP high performance DC probes
<b>Feature resolution</b>	0.2 μm
<b>Travel range (X/Y/Z)</b>	10 mm / 10 mm / 8 mm
<b>Mounting</b>	Vacuum, magnetic
<b>Footprint (W x D)</b>	75 mm x 50 mm
<b>Application</b>	High-resolution probing High-performance IV/CV probing and failure analysis High-performance internal node probing



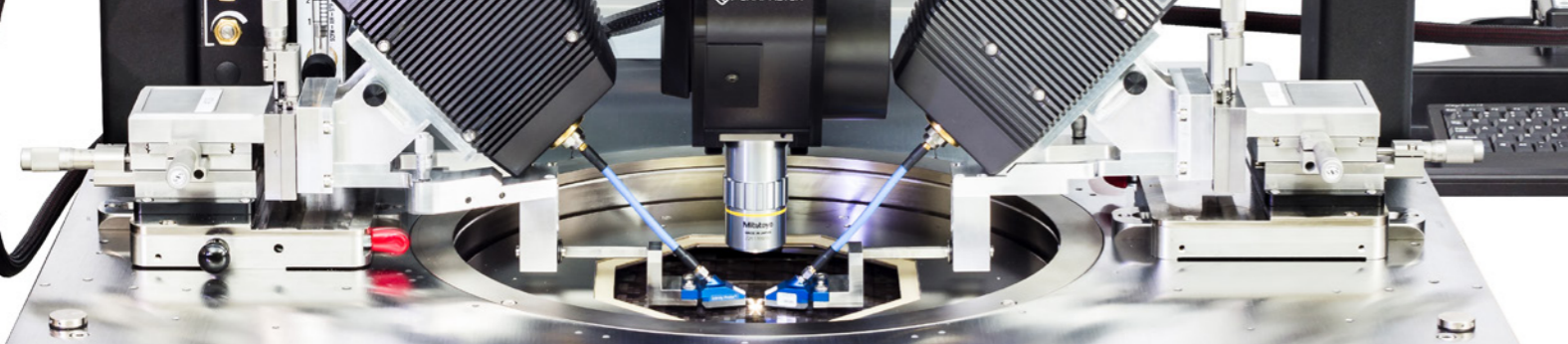
## Manual Vacuum/Cryogenic Probe Positioner

### VCP110

<b>Probe technology</b>	Use with high performance DC or RF probes
<b>Feature resolution</b>	3 μm
<b>Travel range (X/Y/Z)</b>	12 mm / 12 mm / 12 mm
<b>Mounting</b>	Magnetic
<b>Footprint (WxD)</b>	65 mm x 65 mm
<b>Applications</b>	IV/CV/RF probing and failure analysis in vacuum/cryogenic environment



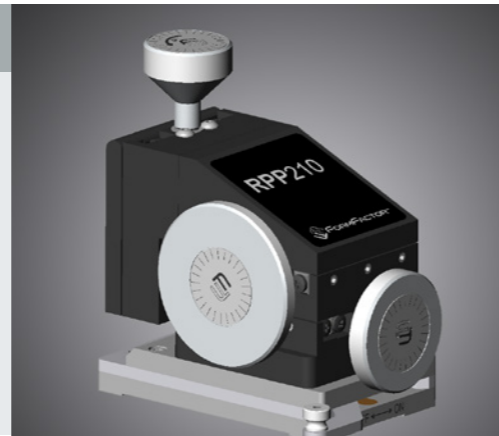
For station compatibility see last page. For detailed specifications see the Probe Station Accessory Catalog.



## Manual RF Probe Positioners

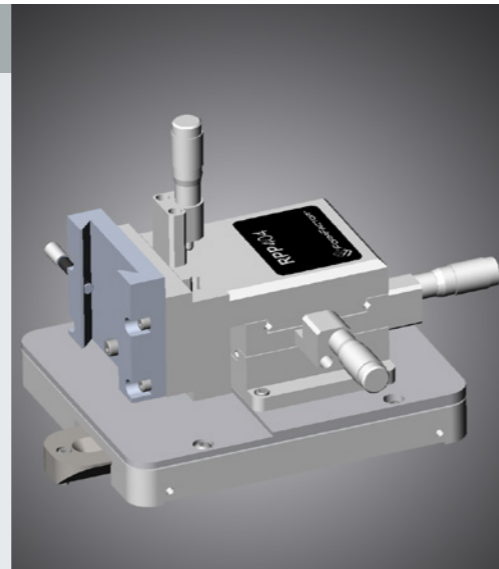
### RPP210

<b>Probe technology</b>	Use with Infinity / ACP / IZI Probe high performance RF probes
<b>Feature resolution</b>	<1 $\mu\text{m}$
<b>Travel range (X/Y/Z)</b>	12.5 mm / 12.5 mm / 12.5 mm
<b>Mounting</b>	Vacuum, magnetic
<b>Footprint (W x D)</b>	90 mm x 60 mm
<b>Application</b>	RF and multi-contact/mixed-signal probing Wafer-level reliability probing



### RPP404

<b>Probe technology</b>	Use with Infinity / ACP / IZI Probe / T-Wave high performance RF probes
<b>Feature resolution</b>	<1 $\mu\text{m}$
<b>Travel range (X/Y/Z)</b>	12 mm / 12 mm / 12 mm
<b>Mounting</b>	Bolt down
<b>Footprint (WxD)</b>	124 mm x 149,5 mm
<b>Applications</b>	High-performance RF, multi-contact/mixed signal probing High-performance wafer-level reliability probing Single-ended broadband/ mm-Wave, THz, source/load-pull, RF noise probing



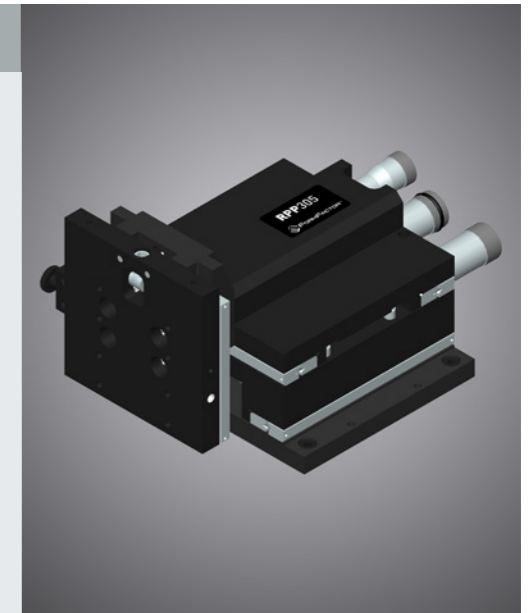
### Digital Micrometer Upgrade Kit for RPP404

Separate your RF probes a precise known amount.  
Particularly useful when performing TRL calibrations which require different lengths of line



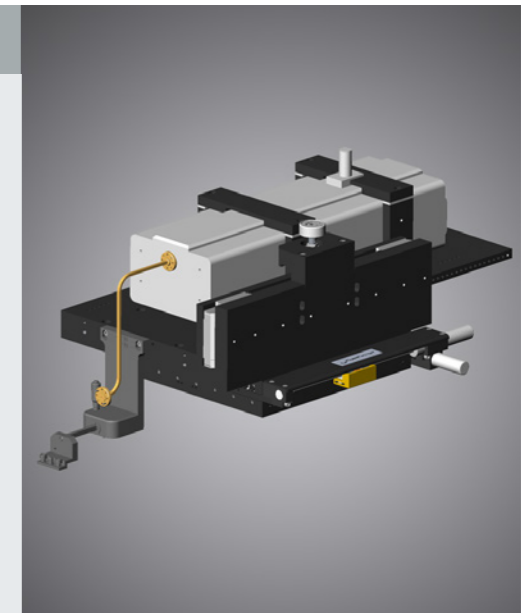
### RPP305

<b>Probe technology</b>	Use with Infinity / ACP / IZI Probe / T-Wave high performance RF probes
<b>Feature resolution</b>	<1 $\mu\text{m}$
<b>Travel range (X/Y/Z)</b>	25 mm / 25 mm / 10 mm
<b>Mounting</b>	Bolt down
<b>Footprint (W x D)</b>	124 mm x 124 mm
<b>Application</b>	High-performance RF, multi-contact/mixed signal probing High-performance wafer-level reliability probing Single-ended broadband/ mm-Wave, terahertz, source/load-pull, RF noise probing



### mmW Large Area Positioner

<b>Probe technology</b>	Use with Infinity / ACP / T-Wave high performance RF probes
<b>Feature resolution</b>	3 $\mu\text{m}$
<b>Travel range (X/Y/Z)</b>	150 mm / 150 mm / 12.5 mm
<b>Mounting</b>	Bolt down
<b>Footprint (W x D)</b>	204 mm x 204 mm
<b>Application</b>	High-performance single-ended/differential broadband/ mm-Wave, sub-THz S-parameters, source/load-pull, RF noise



For station compatibility see last page. For detailed specifications see the Probe Station Accessory Catalog.

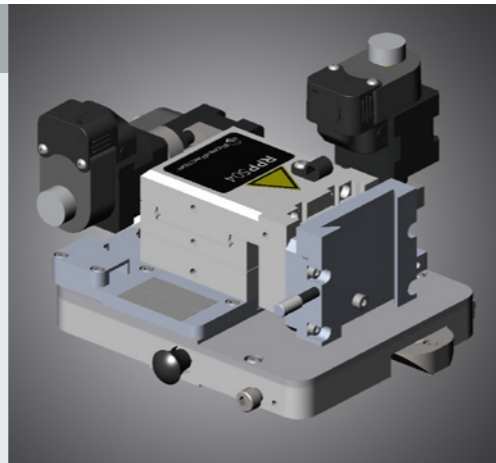


## Motorized RF Probe Positioner RPP504 for Autonomous RF, mm-Wave and Terahertz Measurements



### RPP504

<b>Probe technology</b>	Use with Infinity / ACP / IZI Probe / T-Wave high performance RF probes
<b>Feature resolution</b>	<1 μm
<b>Travel range (X/Y/Z)</b>	12 mm / 12 mm / 12 mm
<b>Minimum step size</b>	0.3 μm / 0.1 μm resolution
<b>Mounting</b>	Bolt down
<b>Footprint (WxD)</b>	124 mm x 149,5 mm
<b>Applications</b>	Autonomous RF, mm-Wave and THz probing, automatic multi-line TRL

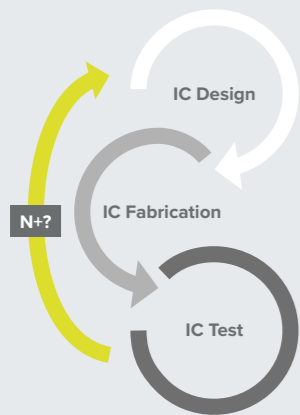


The RPP504 is part of FormFactor's revolutionary **Autonomous RF Measurement Assistant\*\***, which enables fully autonomous, hands-free RF calibrations and measurements over multiple temperatures.

Featuring the exclusive Contact Intelligence™ Technology, it significantly reduces cost of test and accelerates time to market with increased accuracy and reduced design cycles.

### Faster Time to Market

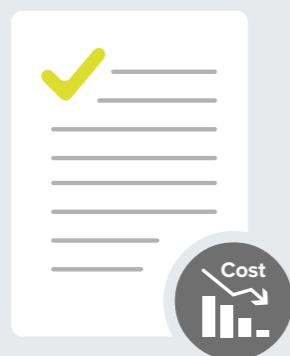
/ More modelling data with increased accuracy and reduced uncertainty



**Fewer Design Cycles**

### Reduced Cost of Test

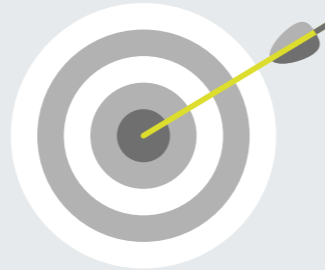
/ More tool utilisation with unattended test  
/ Minimized training costs



**Lower Cost of Test**

### Increased Data Accuracy

/ True autonomous calibration monitoring and re-calibration



**More Accuracy**

\* Available for CM300xi, SUMMIT200 and Elite 300.



## Motorized HexNano Probe Positioner for Autonomous Silicon Photonics Measurements

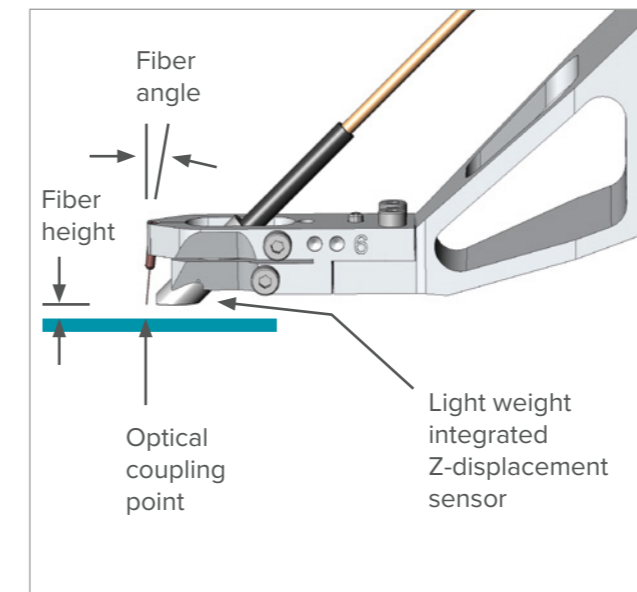
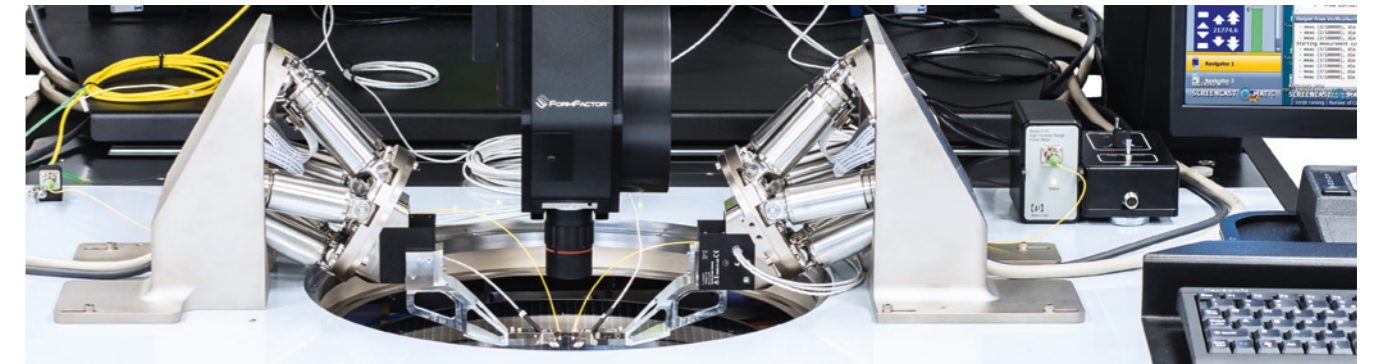


FormFactor offers a completely integrated and validated solution for Silicon Photonics measurements at wafer level\*. Our Autonomous SiPh Measurement Assistant is supported by our unique Contact Intelligence™ Technology and enables you to measure your photonic devices in days instead of months or years – without further development.

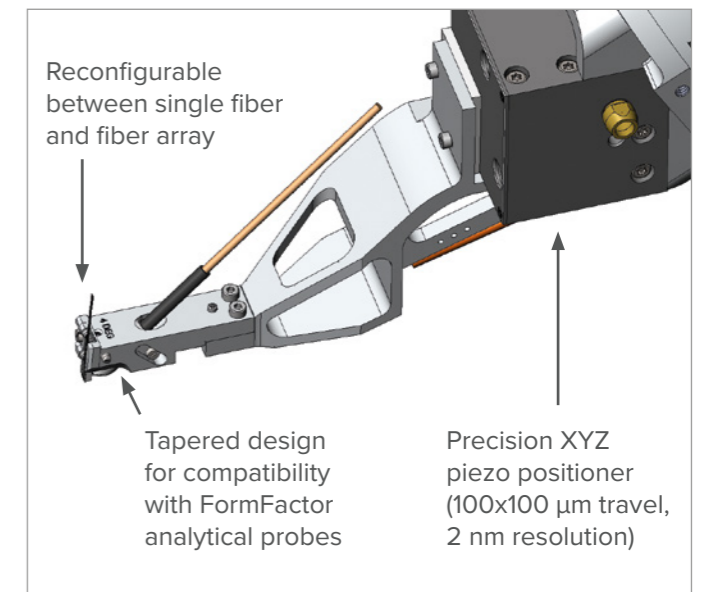
Part of our solution is the HexNano positioner with a precision XYZ piezo positioner and high rigidity space frame fiber arms.

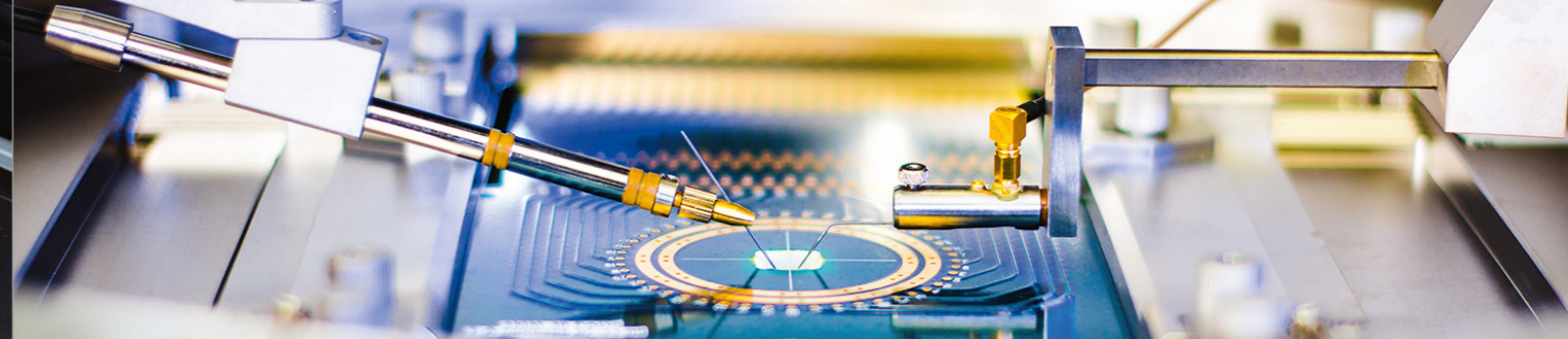
### Industry-First Features

- / Validated Integration
- / Verified Performance
- / Automated Calibrations and Alignments
- / Integrated Z-Displacement
- / Reconfigurable Fiber Arms with Light Guide Technology



\* Available for CM300xi and SUMMIT200.





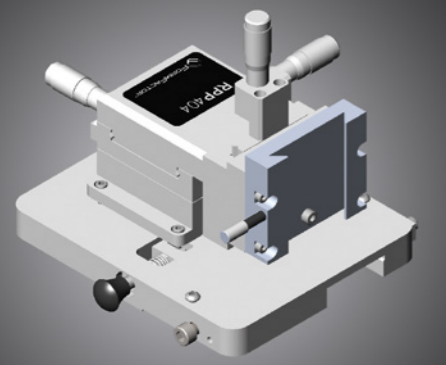
## Easy Swapping Between Probe Arms

Our positioners are highly flexible, and with the corresponding positioner arms they are the perfect match to your FormFactor probe station. Intuitive installation and easy swapping between different positioner arms reduces training needs and leads to faster time to test.

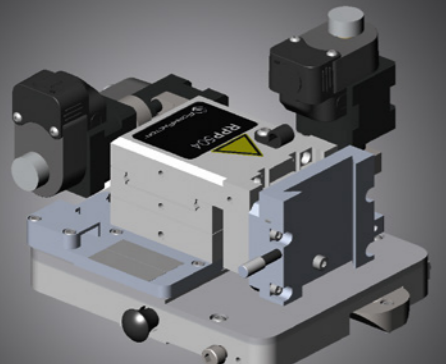
In particular, our positioners for RF, mm-Wave and THz measurements are completely modular. You can simply choose between a manual or programmable positioner body and add a specific arm (for example VDI Mini Extender Arm or Keysight N5291 Arm). The arms are equipped with a dove tail that makes it easy, safe and fast to change between different bands.

### Positioner Body

#### Manual

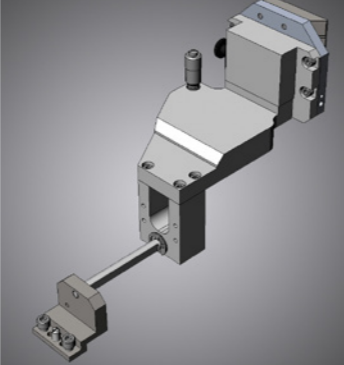


#### Programmable

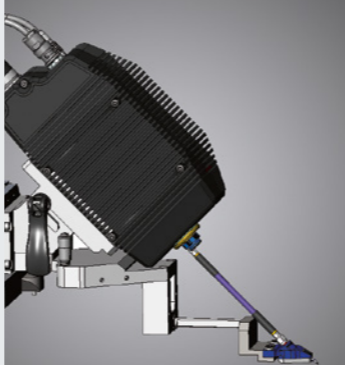


### Positioner Arm

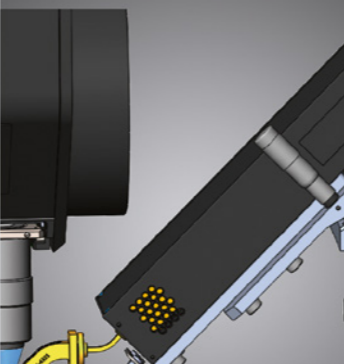
#### < 67 GHz S-Parameter



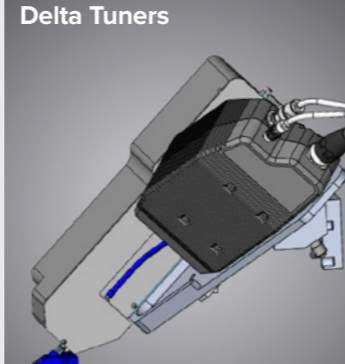
#### 120 GHz Keysight N5291



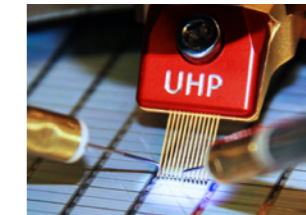
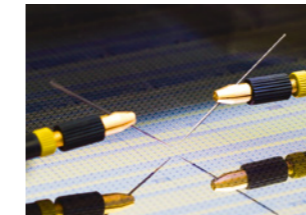
#### 50-330 GHz VDI Extenders



#### 67 or 110/120 GHz Focus Delta Tuners



## Probe Arms



### General CV/IV Arms

- / Basic Coax/Triax measurements down to pA-level
- / PTT needles
- / **Applications:** Failure analysis, Device characterization and modelling

### Dedicated High Voltage/Current Arms

- / On-wafer power device characterization up to 10,000 V DC / 600 A
- / Increased isolation resistance and dielectric strength to provide full triaxial capability at high voltage (3,000 V) for low-leakage measurement
- / Full temperature range of -55 to 300°C
- / Highest safety for the device and the operator
- / **Applications:** High power semiconductor test

### Advanced CV/IV and Low Current Arms

- / Advanced Coax/Triax measurements down to fA-level
- / Easy switching between CV and IV measurements
- / Small pad probing over a full thermal range of -60°C to 300°C with **HTS\*** and unique ceramic blades
- / **Applications:** Highly precise device characterization and modelling, ultra-low noise measurements (1/f)

### RF/mm-Wave and Terahertz Arms

- / Ergonomic concept: completely modular
- / Lowest possible insertion loss
- / Highest raw directivity and dynamic range
- / Extremely stable calibrations
- / Available probes: ACP, Infinity, IZI Probe, T-Wave
- / Highest accuracy and reliable data over a full thermal range of -60°C up to +175°C (depending on frequency) with **HTS\***
- / **Applications:** RF, mm-Wave, terahertz probing, load-pull

#### \*High Thermal Stability (HTS)

High Thermal Stability (HTS) is part of FormFactor's unique Contact Intelligence Technology. A special dedicated low-thermal expansion material enables

extremely stable probing over time and at multiple temperatures. HTS is available for certain CV/IV, RF, mm-Wave and terahertz arms.



## Probe Station Compatibility

	MPS150/ EPS150	SUMMIT	BlueRay	PM8/ EPS200	CM300xi	PA300/ PM300	TESLA	Vac/Cryo
<b>Manual Positioners</b>								
DPP105	●	○	○	●	—	●	—	—
DPP2xx	●	●	●	●	●	●	●	—
DPP3xx	●	○	○	●	○	●	○	—
DPP450	●	○	—	○	○	○	—	—
VCP110	—	—	—	—	—	—	—	●
RPP210	●	●	●	●	●	●	●	—
RPP304	●	●	—	●	●	—	—	—
RPP305	●	○	●	●	●	●	—	—
RPP404	●	●	—	●	●	—	—	—
mmW LAP	—	●	—	●	●	○	○	—
<b>Motorized Positioners</b>								
RPP504	—	●	—	●	●	—	—	—
PH510	—	—	●	●	○	●	—	—
SiPh	—	●**	—	—	●	—	—	—

● Recommended    ○ Possible but not recommended    — Not available

\*Summit12000 only

\*\*SUMMIT200 only

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