

# MPI TS300 | 300 mm Manual Probe System

## For accurate and reliable DC/CV and RF measurements

### FEATURES / BENEFITS

#### Universal Use

- Designed for wide variety of applications such as Device Characterization and Modeling, Wafer Level Reliability, Failure Analysis, IC Engineering and MEMS

#### Ergonomic Design

- One handed puck control stage movement for fast positioning
- Rigid platen accommodates up to 10 DC or 4 RF positioners
- Highly repeatable platen lift design with three discrete positions for contact, separation, and loading

#### Upgradability

- Available with various chuck options and wide range of accessories such as DC/RF/mmW MicroPositioners, Optics, microscopes and EMI shielded dark box to support various application requirements



### SPECIFICATIONS

#### Chuck XY Stage (Standard)

Travel	335 x 355 mm (13.2 x 14 in)
Resolution	5.0 $\mu\text{m}$ (0.2 mils)
Planarity	< 10 $\mu\text{m}$
Theta travel (standard)	360°
Theta travel (fine)	$\pm 5.0^\circ$
Theta resolution	$7.5 \times 10^{-3}$ gradient
Movement Control	XY-guided puck air-vacuum control
Fine adjustment	Micrometer

**Manual Microscope Stage (Air Bearing)**

Movement range	25 x 25 mm (1.05 x 1.05 in)
Resolution	n.a.
Scope lift	Manual, tilt-back
Movement control	Air bearing, vacuum

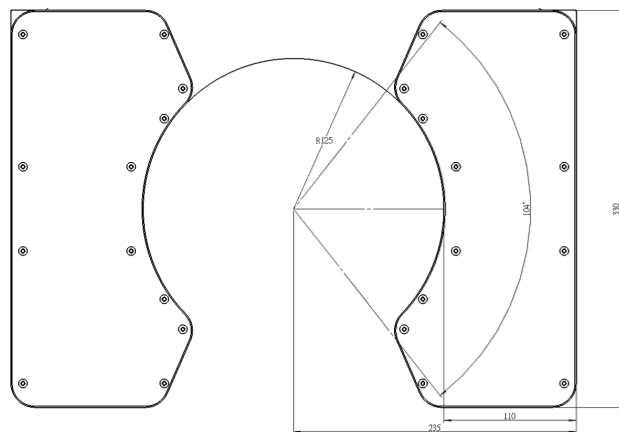
**Manual Microscope Stage (Linear)**

Movement range	50 x 50 mm (2.1 x 2.1 in)
Resolution	10 µm
Scope lift	Manual, vertical
Movement control	Coaxial, linear

**PROBE PLATEN**

**Specifications**

Material	Steel
Dimension	See drawing
Chuck to platen height	Min. 5 mm
Max. No of MicroPositioners	10 DC and 4 RF
Platen lift control	3 positions - contact (0), separation (300 µm), and loading (3 mm)
Platen Z-height movement	Micrometer adjustment for fine control
Z-height adjustment range	Max. 40 mm (1.57 in)
Separation repeatability	< 1 µm (0.04 mils)
DC positioner mounting	Magnetic
RF positioner mounting	Magnetic with guide rail



## NON-THERMAL CHUCKS

### Standard Wafer Chuck

Diameter	310 mm
Material	Stainless steel
Supported DUT sizes	Shards or wafers 25 mm (1 in) through 300 mm (12 in)
Vacuum ring diameter	3, 27, 45, 69, 93, 117, 141, 164, 194, 214, 254, 294 mm
Vacuum ring actuation	Multizone control - All connected in meander shape, center hole 3 mm diameter
Chuck surface	Planar with centric engraved vacuum grooves
Surface planarity	$\leq \pm 5 \mu\text{m}$
Rigidity	$< 15 \mu\text{m} / 10 \text{N @edge}$

### RF Wafer Chuck

Diameter	310 mm with 2 integrated AUX areas
Material	Nickel plated aluminum (flat with 0.5 mm holes)
Supported DUT sizes	Main - Single DUTs down to 3 x 5 mm size or wafers 25 mm (1 in) through 300 mm (12 in)
Vacuum hole sections (diameter)	3, 27, 45, 69, 93, 117, 141, 164, 194, 214, 254, 294 mm (four holes in center with 3 x 3 mm distance)
Vacuum holes actuation	Mechanically selected
Chuck surface	Planar with 0.5 mm diameter holes in centric sections
Surface planarity	$\leq \pm 5 \mu\text{m}$
Rigidity	$< 15 \mu\text{m} / 10 \text{N @edge}$

### Auxiliary Chuck

Quantity	2 AUX chucks
Position	Integrated to rear side of main chuck
Substrate Size (W x L)	Max. 25 x 25 mm (1.0 x 1.0 in)
Material	Ceramic, RF absorbing material suitable for mmW applications
Surface planarity	$\leq \pm 5 \mu\text{m}$
Vacuum control	Controlled independently, separate from chucks

### Electrical Specification (Coax)

Operation voltage	In accordance with EC 61010, certificates for higher voltages available upon request
Isolation	$> 2 \text{G}\Omega$

### Electrical Specification (Triax)

Chuck isolation	$> 100 \text{G}\Omega$
Force to guard	$> 100 \text{G}\Omega$
Guard to shield	$> 10 \text{G}\Omega$
Force to shield	$> 50 \text{G}\Omega$

## THERMAL CHUCKS

### Specifications (ERS Thermal Chucks)

	20 °C to 300 °C (Coaxial)	20 °C to 200 °C (Triaxial)	20 °C to 300 °C (Triaxial)
Temperature Control Method	Cooling Air / Resistance Heater	Cooling Air / Resistance Heater	Cooling Air / Resistance Heater
Coolant	Air (user supplied)	Air (user supplied)	Air (user supplied)
Smallest Temperature Selection Step	0.1 °C	0.1 °C	0.1 °C
Chuck Temperature Display Resolution	0.01 °C	0.01 °C	0.01 °C
Temperature Stability	±0.08 °C	±0.08 °C	±0.08 °C
Temperature Accuracy	0.1 °C	0.1 °C	0.1 °C
Control Method	Low Noise DC/PID	Low Noise DC/PID	Low Noise DC/PID
Interfaces	RS232C	RS232C	RS232C
Chuck Surface Plating	Gold Plated with Pinhole Surface	Gold Plated with Pinhole Surface	Gold Plated with Pinhole Surface
Temperature Sensor	Pt100 1/3DIN, 4-line wired	Pt100 1/3DIN, 4-line wired	Pt100 1/3DIN, 4-line wired
Temperature Uniformity	< ±0.5 °C at 20 to 200 °C < ±0.5 °C at > 200 °C	< ±0.5 °C	< ±0.5 °C at 20 to 200 °C < ±0.5 °C at > 200 °C
Surface Flatness and Base Parallelism	< ±12 µm	< ±12 µm	< ±12 µm
Heating and Cooling Rates	20 to 300 °C < 25 min 300 to 20 °C < 30 min	20 to 200 °C < 25 min 200 to 20 °C < 25 min	20 to 300 °C < 35 min 300 to 20 °C < 35 min
Electrical Isolation (Coaxial)	> 10 T Ω at 25 °C > 10 G Ω at 200 °C	N.A	N.A
Leakage @ 10 V (Triaxial)	N.A	< 15 fA at 25 °C < 30 fA at 200 °C	< 15 fA at 25 °C < 50 fA at 300 °C
Capacitance	< 1500 pF	N.A	N.A
Maximum Voltage between Chuck Top and GND	600 V DC	600 V DC	600 V DC

### Facility Requirements

<b>Electrical Supply</b>	Hot Only Thermal Chucks
Electrical Primary Connection	100 to 240 VAC auto switch
Frequency	50 Hz / 60 Hz
<b>Compressed Air Supply</b>	
Operating Temperature	6.0 bar (0.8 MPa, 87 psi) at specified flow rate
Due Point	≤ 0 °C

### Controller Dimensions / Power and Air Consumption

System Type	W x D x H (mm)	Weight (kg)	Power Cons. (VA)	max. Air Flow (l/min)
20 to 300 °C (Coaxial Chuck)	300 x 360 x 135	12	1000	400
20 to 200 °C (Triaxial Chuck)	300 x 360 x 135	12	1000	400
20 to 300 °C (Triaxial Chuck)	300 x 360 x 135	12	1000	400

## FACILITY REQUIREMENTS

Power	Not required (Base machine without accessories)
Vacuum	-0.5 bar
Compressed air	4 bar

## REGULATORY COMPLIANCE

- Certification: CE

## WARRANTY

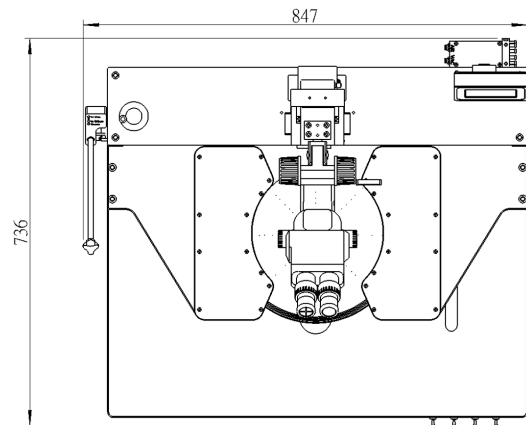
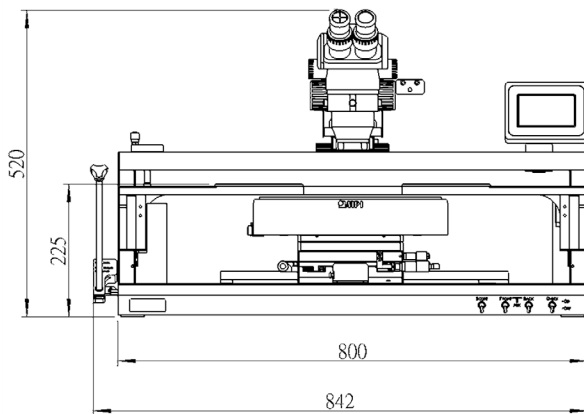
- Warranty\*: 12 months
- Extended service contract: contact MPI Corporation for more information

\*See MPI Corporation's Terms and Conditions of Sale for more details.

## PHYSICAL DIMENSIONS

### Station Platform with Bridge

Station dimensions (WxDxH)	874 x 736 x 520 mm (33.4 x 29.0 x 20.5 in)
Weight	~95 kg (210 lb.)



### The MPI World Map



Direct contact:  
 Asia region: [ast-asia@mpi-corporation.com](mailto:ast-asia@mpi-corporation.com)  
 EMEA region: [ast-europe@mpi-corporation.com](mailto:ast-europe@mpi-corporation.com)  
 America region: [ast-americas@mpi-corporation.com](mailto:ast-americas@mpi-corporation.com)

For local support please visit our homepage: [www.mpi-corporation.com](http://www.mpi-corporation.com)

E-Mail: [info@mpi-corporation.com](mailto:info@mpi-corporation.com) • Web: [www.mpi-corporation.com](http://www.mpi-corporation.com)