

MPI TS150 | 150 mm Manual Probe System

For accurate and reliable DC/CV, RF and High Power measurements

FEATURES / BENEFITS

Universal Use

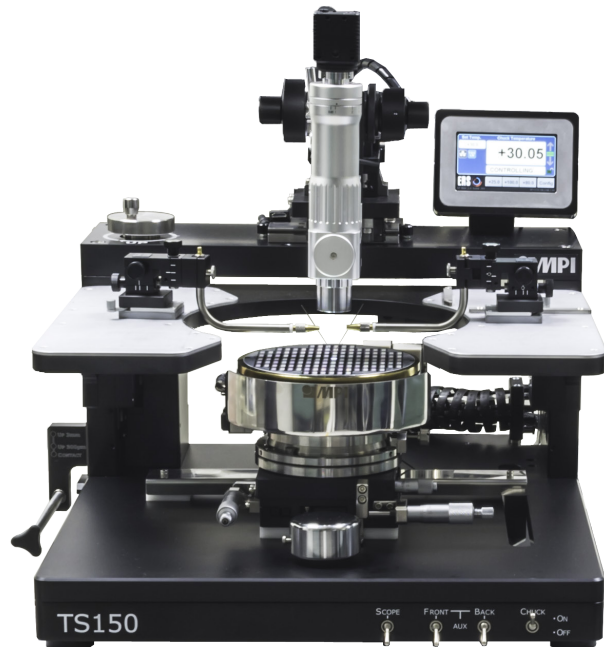
- Designed for wide variety of applications such as Device Characterization and Modeling, Wafer Level Reliability, Failure Analysis, IC Engineering, MEMS and High Power

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	185 x 235 mm (7.28 x 9.25 in)
Resolution	5.0 μm (0.2 mils)
Planarity	< 10 μm
Theta travel (standard)	360°
Theta travel (fine)	$\pm 5.0^\circ$
Theta resolution	7.5×10^{-3} gradient
Movement Control	XY-guided puck air-vacuum control
Fine adjustment	Micrometer

Optional XY Stage for TS150-ES

Planarity	< 10 μm
Theta travel (standard)	Free movement up to 360°
Movement Control	Easy puck air-vacuum control for TS150-ES
Fine adjustment	n.a.

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

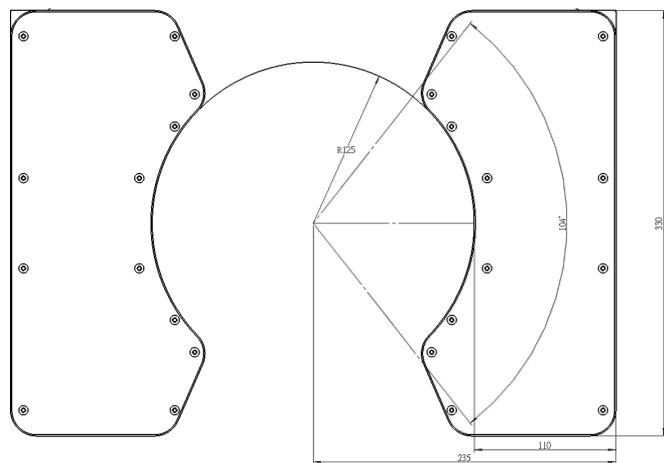
Manual Microscope Stage (Linear)

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
Dimensions	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	High resolution screw for fine control
Z-height adjustment range	Max. 25 mm (1 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	160 mm
Material	Stainless steel
Supported DUT sizes	Shards or wafers 25 mm (1 in) through 150 mm (6 in)
Vacuum ring diameter	4, 27, 45, 69, 93, 117, 141 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	≤± 5 μm
Rigidity	< 15 μm / 10 N @edge

RF Wafer Chuck

Diameter	150 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 50 mm (2 in) through 150 mm (6 in)
Vacuum hole sections (diameter)	27, 45, 69, 117, 141 mm (four holes in center with 3 x 3 mm distance)
Vacuum switch	4 for center: 50, 100, 150 mm (2, 4, 6 in)
Vacuum holes actuation	Mechanically selected
Chuck surface	Planar with 0.5 mm diameter holes in centric sections
Surface planarity	≤± 5 μm
Rigidity	< 15 μm / 10 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	≤± 5 μm
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 GΩ

Electrical Specification (Triax)

Chuck isolation	> 100 GΩ
Force to guard	> 100 GΩ
Guard to shield	> 10 GΩ
Force to shield	> 50 GΩ

THERMAL CHUCKS

Specifications (ERS)

	20 °C to 200 °C (Coaxial)	20 °C to 300 °C (Coaxial)	20 °C to 200 °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	< ±0.5 °C	< ±0.5 °C
Surface Flatness and Base Parallelism	< ±10 µm	< ±10 µm	< ±10 µm
Heating and Cooling Rates	20 to 200 °C < 12 min 200 to 20 °C < 15 min	20 to 300 °C < 15 min 300 to 20 °C < 20 min	20 to 200 °C < 20 min 200 to 20 °C < 20 min
Electrical Isolation (Coaxial)	> 10 T Ω at 25 °C > 300 G Ω at 200 °C	> 10 T Ω at 25 °C > 10 G Ω at 300 °C	N.A
Leakage @10 V (Triaxial)	N.A	N.A	< 15 fA at 25 °C < 30 fA at 200 °C
Capacitance	< 750 pF	< 750 pF	N.A
Maximum Voltage between Chuck Top and GND	600 V DC	600 V DC	600 V DC

HIGH POWER THERMAL CHUCKS

Specifications (ERS)

	20 °C to 200 °C (Triaxial, High Power)	20 °C to 300 °C (Triaxial, High Power)
Temperature Control Method	Cooling Air / Resistance Heater	Cooling Air / Resistance Heater
Coolant	Air (user supplied)	Air (user supplied)
Smallest Temperature Selection Step	0.1 °C	0.1 °C
Chuck Temperature Display Resolution	0.01 °C	0.01 °C
Temperature Stability	±0.08 °C	±0.08 °C
Temperature Accuracy	0.1 °C	0.1 °C
Control Method	Low Noise DC/PID	Low Noise DC/PID
Interfaces	RS232C	RS232C
Chuck Surface Plating	Gold Plated with thin wafer optimized Surface	Gold Plated with thin wafer optimized Surface
Temperature Sensor	Pt100 1/3DIN, 4-line wired	Pt100 1/3DIN, 4-line wired
Temperature Uniformity	< ±0.5 °C	< ±0.5 °C at 20 to 200 °C < ±0.5 °C at > 200 °C
Surface Flatness and Base Parallelism	< ±10 µm	< ±10 µm
Heating and Cooling Rates	20 to 200 °C < 20 min 200 to 20 °C < 20 min	20 to 300 °C < 18 min 300 to 20 °C < 25 min
Leakage @10 V (Triaxial)	< 15 fA at 25 °C < 30 fA at 200 °C	< 15 fA at 25 °C < 50 fA at 300 °C
Leakage @3000 V	< 5 pA at 25 °C < 10 pA at 200 °C	< 5 pA at 25 °C < 15 pA at 300 °C
Leakage @10 kV (Coaxial)	< 6 nA at 200 °C	< 6 nA at 300 °C
Maximum Voltage between Chuck Top and GND	10 kV DC	10 kV DC

Facility Requirements

Electrical Supply

Electrical Primary Connection	100 to 240 VAC auto switch	100 to 240 VAC auto switch
Frequency	50 Hz / 60 Hz	50 Hz / 60 Hz

Compressed Air Supply

Operating Temperature	6.0 bar (0.8 MPa, 87 psi) at specified flow rate	6.0 bar (0.8 MPa, 87 psi) at specified flow rate
Due Point	≤ 0°C	≤ 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 200 °C (Coaxial Chuck)	300 x 360 x 135	12	700	200
20 to 300 °C (Coaxial Chuck)	300 x 360 x 135	12	700	200
20 to 200 °C (Triaxial Chuck)	300 x 360 x 135	12	700	200

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

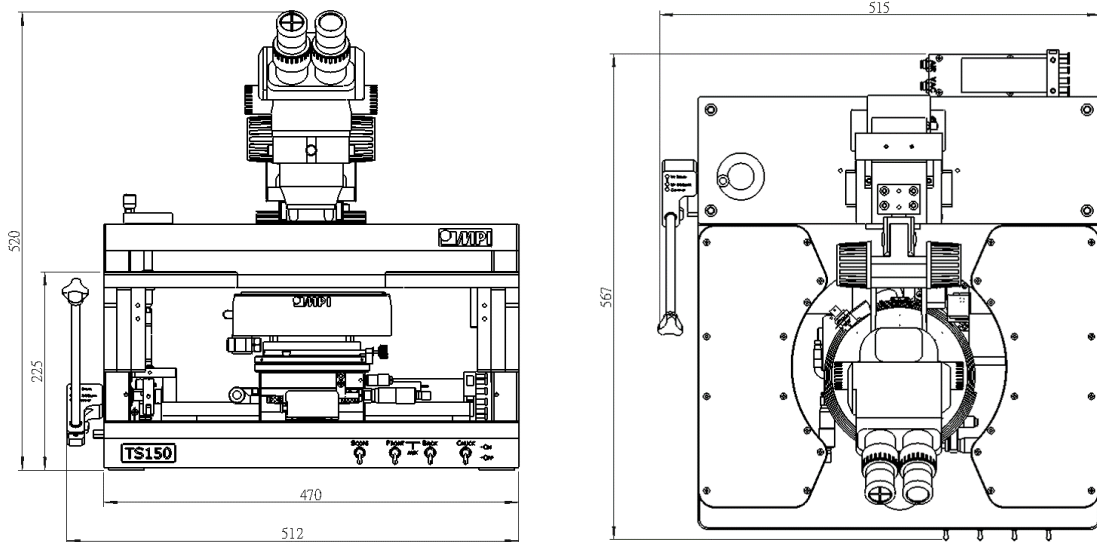
*See MPI Corporation's Terms and Conditions of Sale for more details.

PHYSICAL DIMENSIONS

Station Platform with Bridge*

Station dimensions (W x D x H)	515 x 567 x 520 mm (20.2 x 22.3 x 20.5 in)
Weight	~60 kg (132 lb.)

*Station accessories, such as dark box, cameras or laser cutters, may increase the total height to up to 794 mm (31.3 in).



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