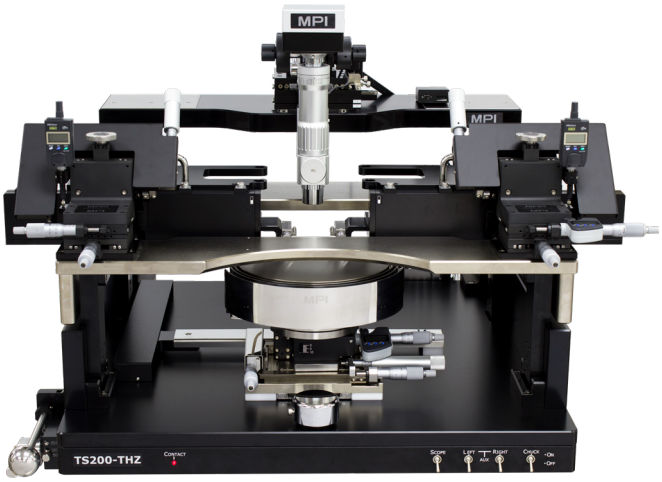
MPI TS200-THZ | 200 mm Manual Probe System

Industry's first explicitly designed 200 mm probe system providing accurate tests for mm-wave, THz, and automated impedance tuner applications

FEATURES / BENEFITS



Variety of Applications

- Seamless integration of any banded, differential or broadband frequency extenders and automated impedance tuners
- Novel design of extenders/tuners integration for maximum of measurement dynamic
- Maximum on mechanical stability and repeatability combined with convenient and safety operation

Ergonomic Design

- Unique puck controlled air bearing stage for quick single-handed operation
- Rigid and large platen accommodates large area MicroPositioners, holding mmw extenders
- Highly repeatable platen lift design with three discrete positions for contact, separation, and loading

Upgradability

- Optional vibration isolated support for large automated impedance tuners
- Dedicated optics for shorting the cables and waveguide's lengths, for maximum of measurement directivity
- Various chuck options, PCB holders and a wide range of accessories such as DC/RF/mmW MicroPositioners

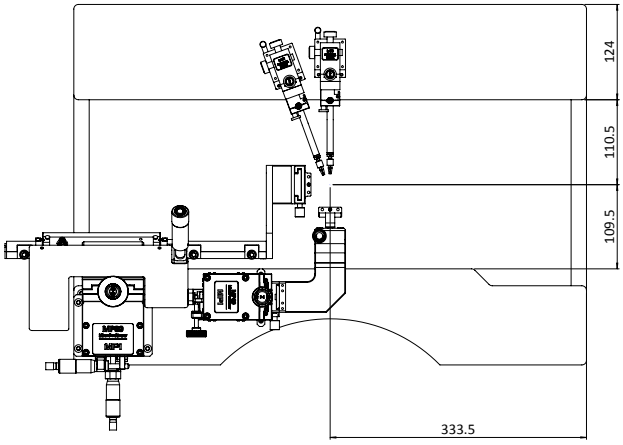
SPECIFICATIONS

Chuck XY Stage (Standard)	
Total travel range	255 x 325 mm (10.0 x 12.8 in)
Fine-travel range	25 x 25 mm fine micrometer control
Fine-travel resolution	< 1.0 µm (0.04 mils) @ 500 µm/rev
Planarity	< 10 µm
Theta travel (standard)	360°
Theta travel (fine)	± 5.0°
Theta resolution	7.5 x 10^{-3} gradient
Movement	Puck controlled air bearing stage
Chuck Z Stage	
Travel range	10 mm (0.4 in)
Fine-travel resolution	< 1.0 µm (0.04 mils) @ 500 µm/rev, with digital indicator
Manual Microscope Stage (Linear)	
Movement range	50 x 50 mm (2 x 2 in) or 80 x 80 mm (3.15 x 3.15 in)
Resolution	< 5µm (0.2 mils)
Scope lift	Manual, tilt-back or vertical (depending on microscope type)
Movement	Independently controlled X and Y movement with locking screws

PROBE PLATEN

Specifications

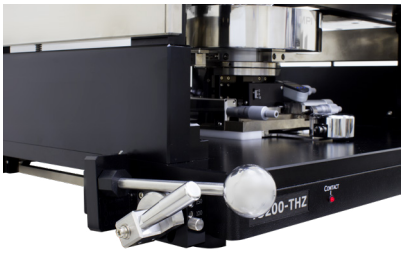
Design	For unsurpassed stability: low profile, four pole support
Material	Nickel plated steel
Dimension	Large area platen, see drawing
Chuck top to platen top	Min. 28 mm
Max. No of MicroPositioners	2x mmW E/W + 2x RF N/S and 4x DC or 2x mmW E/W + 8x DC
Platen lift control	3 positions - contact (0), separation (300 µm), and loading (3 mm)
Separation repeatability	< 1 µm (0.04 mils) by „automated“ control
mmW MicroPositioner mounting	Bolt down
RF MicroPositioner mounting	Magnetic with guided rail
DC MicroPositioner mounting	Magnetic

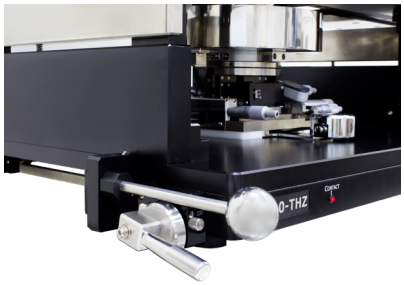


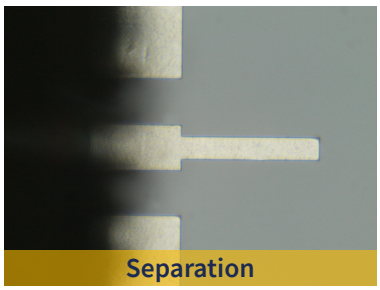
Probe Platen design for DC, RF and THz MicroPositioners

PROBE HOVER CONTROL™

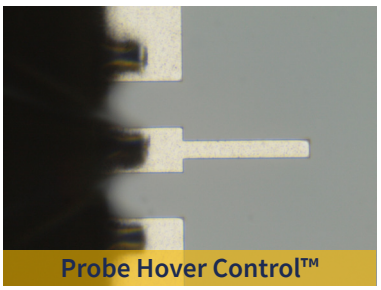
MPI Probe Hover Control™ comes with hover heights (50, 100 or 150 µm) for easy and convenient probe to pad alignment.



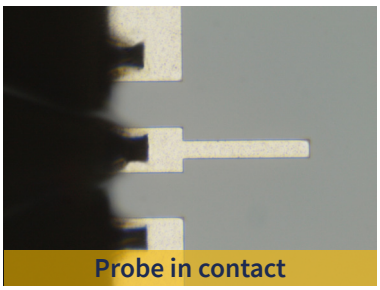




Separation

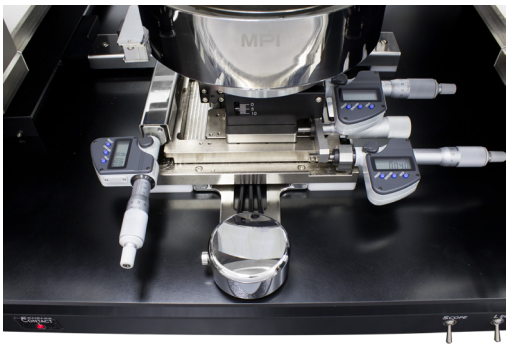


Probe Hover Control™



Probe in contact

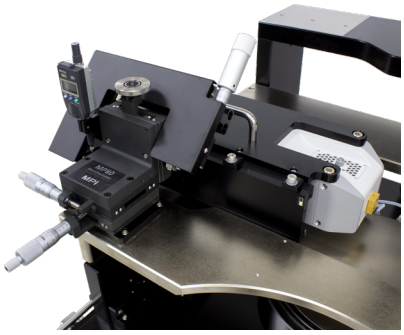
CONTACT / OVER-TRAVEL CONTROL

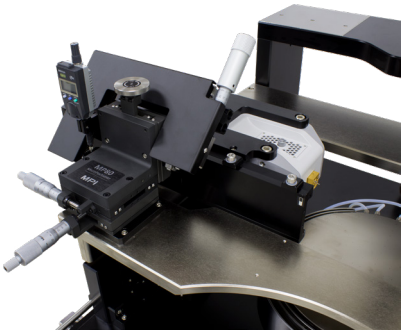


MPI offers the worldwide unique and most accurate contact / over-travel control with 1 µm accuracy for easy measurement reproducibility and accuracy.
XY digital micrometers are optionally available as well.

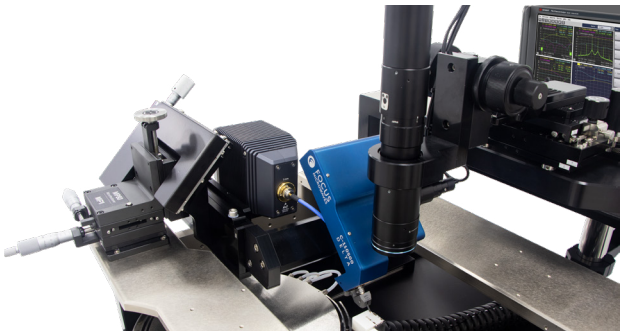
FREQUENCY EXTENDER ADAPTATION

Seamless integration of any frequency extenders for best measurement directivity at 200 mm wafers.





AUTOMATED IMPEDANCE TUNER INTEGRATIONS



To achieve optimum tuning range & highest gamma

MPI ThermoShield™

Enables the testing of wafers up to a size of 200 mm with a thermal chuck.

NON-THERMAL CHUCKS

RF Wafer Chuck

Connectivity	Kelvin Triax (f)
Diameter	210 mm with 2 integrated AUX areas
Material	Nickel Plated Aluminium (flat with 0.5 mm holes)
Chuck surface	Planar with 0.5 mm diameter holes in centric sections
Vacuum holes sections (diameter)	3, 27, 45, 69, 93, 117, 141, 164, 194 mm
Vacuum actuation	Manual switch between Center (4 holes), 100, 150, 200 mm (4, 6, 8 in)
Supported DUT sizes	Single DUTs down to 4 x 4 mm size or wafers 100 mm (4 in) thru 200 mm (8 in)*
Surface planarity	≤± 5 µm
Rigidity	< 15 µm / 10 N @edge

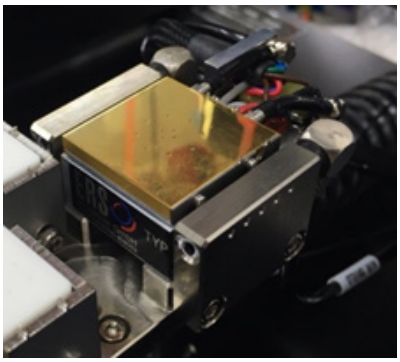
Electrical Specification

Operation voltage	In accordance with EC 61010, certificates for higher voltages available upon request
Isolation	> 2 GΩ

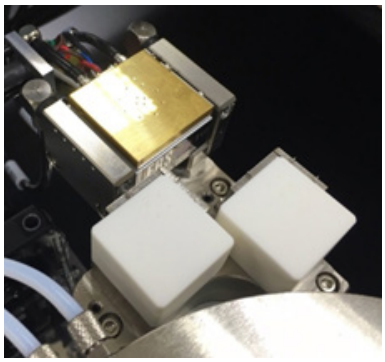
**Single DUT testing requires higher vacuum conditions dependent upon testing application.*

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 x 1 in)
Material	Ceramic, RF absorbing material for accurate calibration
Surface planarity	≤± 5 µm
Vacuum control	Controlled independently, separate from chucks

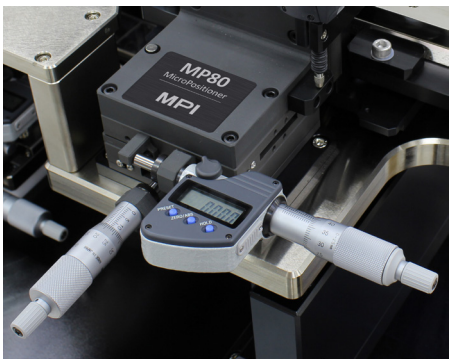


Thermal chuck system for testing single ICs



MPI auxiliary chucks made by ceramic

MP80-DX



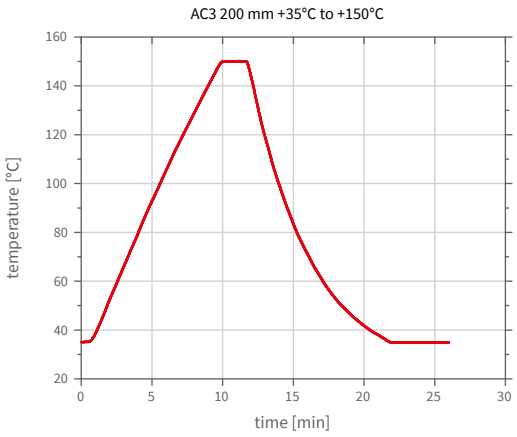
The optional MP80-DX MicroPositioner with the integrated digital micrometer enables outstanding simplicity for the multiline TRL.
When operating the MP80-DX, the operator simply needs to zero-out the digital micrometer after the initial adjustment of the probes, i.e., on the thru standard. Next, the distance between RF probes can be easily re-adjusted to the required value of Δl with the precision better than 1 µm.

THERMAL CHUCKS

Specifications of MPI ERS Integrated Technology

	35 °C to 150 °C	20 °C to 200 °C	25 °C to 150 °C
Maximal wafer size	200 mm	200 mm	25 x 25 mm Single IC
Connectivity	Coax BNC (f)	Kelvin Triax (f)	Coax BNC (f)
Temperature control method	Cooling air / Resistance heater	Cooling air / Resistance heater	Peltier heater
Coolant	Air (user supplied)	Air (user supplied)	Air (max. 50 l/min)
Smallest temperature selection step	0.1 °C	0.1 °C	0.1 °C
Chuck temperature display resolution	0.1 °C	0.01 °C	0.1 °C
External touchscreen display operation	N/A	Yes	N/A
Temperature stability	±0.5 °C	±0.08 °C	±0.2 °C
Temperature accuracy	±1 °C	±0.1 °C	±1 °C
Control method	DC/PID	Low noise DC/PID	DC/PID
Interfaces	RS232C	RS232C	RS232C
Chuck surface plating	Nickel plated with pinhole surface	Nickel plated with pinhole surface	Gold plated with pinhole surface
Temperature sensor	Pt100 1/3DIN	Pt100 1/3DIN, 4-line wired	Pt100 1/3DIN, 4-line wired
Temperature uniformity	< ±1 °C	< ±0.5 °C	< ±0.5 °C
Surface flatness and base parallelism	< ±15 µm	< ±10 µm	< ±15 µm
Heating and cooling rates	35 to 150 °C < 12 min 150 to 35 °C < 15 min	20 to 200°C < 15 mins 200 to 20°C < 20 mins	25 to 150 °C < 6 min 150 to 25 °C < 6 min
Electrical isolation	> 0.5 T Ω at 25 °C	> 10 T Ω at 25 °C > 300 G Ω at 200 °C	> 0.5 T Ω at 25 °C
Leakage @ 10 V	N/A	N/A	N/A
Capacitance	< 750 pF	< 900 pF	< 750 pF
Maximum voltage between chuck top and GND	500 V DC	500 V DC	500 V DC

TYPICAL TRANSITION TIME



FACILITY REQUIREMENTS

Thermal Chuck Electrical Supply

Electrical Supply	Hot only thermal chucks
Electrical primary connection	100 to 240 VAC auto switch
Frequency	50 Hz / 60 Hz
Compressed Air Supply	
Operating pressure	6.0 bar (0.6 MPa, 87 psi) at specified flow rate
CDA dew 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)
35 to 150 °C	300 x 265 x 135	10	500	200
20 to 200 °C	300 x 360 x 135	12	700	200
25 to 150 °C	300 x 261 x 135	3.3	100	50

General Probe System

Power	100-240 V AC 50/60 Hz for optical accessories* only
Vacuum	-0.5 bar (for single DUT) / -0.3 bar (for wafers)
Compressed air	6.0 bar

**e.g. microscope illumination, CCD cameras, monitors.*

WARRANTY

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

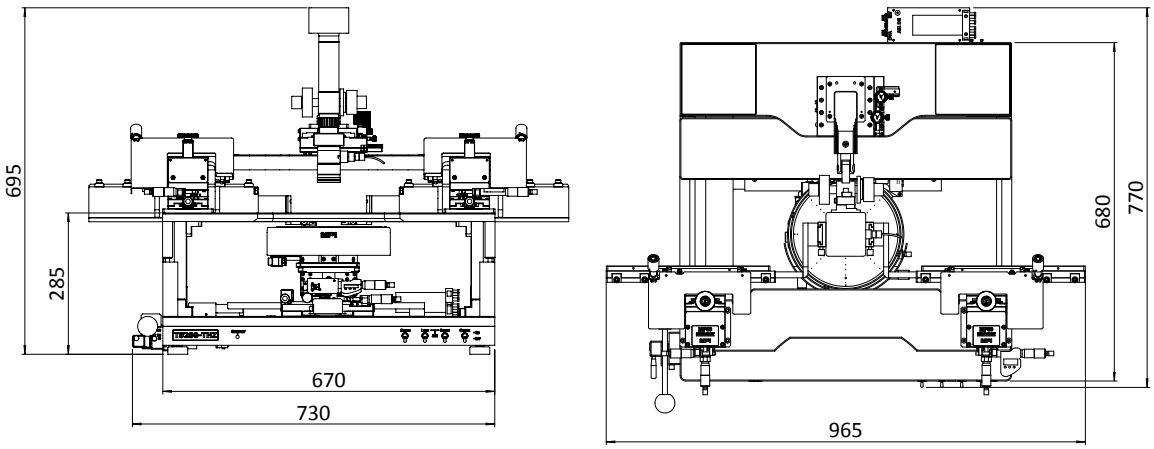
**See MPI Corporation's Terms and Conditions of Sale for more details.*

PHYSICAL DIMENSIONS

Station Platform with Bridge*

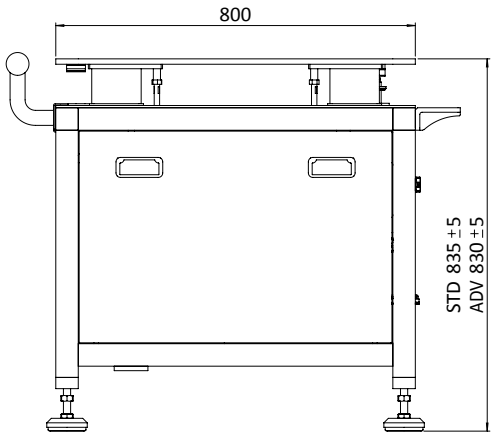
Dimensions (W x D x H)	670 x 680 x 695 mm (26.4 x 26.8 x 27.4 in)
Weight	~135 kg (298 lb.)

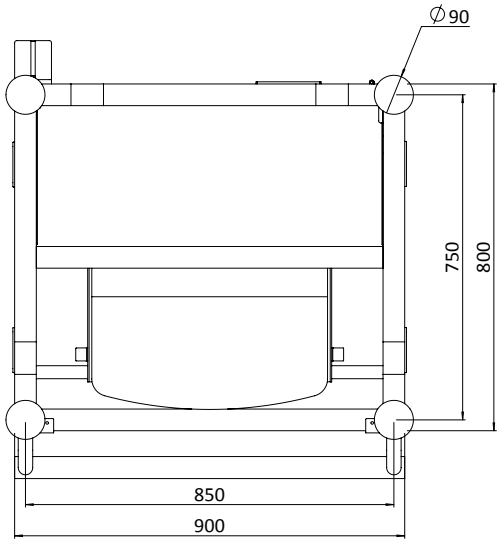
**Station accessories, such as different microscopes, cameras, or laser cutters, may change the total height.*



Vibration Isolation Table

	Standard	Advanced
Dimensions (W x D x H)	900 x 800 x 835 mm (35.4 x 31.5 x 32.9 in)	900 x 800 x 830 mm (35.4 x 31.5 x 32.7 in)
Feature	Adjustable air damping system	Automatic load leveling
Keyboard / Mouse Tray Included	Yes	
Front Protection Bar	Yes	
Castors Included	Yes	
Shelves Included	Upper and Lower	
Accessories Accepted	Monitor Stand(s) and Instrument Shelf	
Weight	Approx. 210 kg (463 lb.)	Approx. 210 kg (463 lb.)





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www.mpi-corporation.com/ast/support/local-support-worldwide

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