PROBING SEMICONDUCTOR

DeepTouch1000 Probe Station for Probe Card Test

1000 kgf full-load measured • for cards to 300,000 pins

The mechanical platform has completed full-load rigidity testing at 1,000 kgf; the 300,000-pin configuration is an architectural target, with the final supported pin count confirmed per card design and the project FAT/SAT plan. Contacting every pin at once takes roughly 450 kgf under representative conditions, with the actual total load depending on per-pin force, card structure, contact travel and process conditions. DeepTouch1000 delivers 1000 kgf (about 9.81 kN) with a PB5801 all-in-one structure, handling whole-card touchdown, 3D probe-tip inspection and contact-state verification, and mapping back to PCT5801 anomaly coordinates.

Key figures

1000 kgf	Chuck force — Whole-card touchdown at high pin count	**Up to 300,000 pins**	Target card scale — v2-aligned target, per pin force and card configuration
PB5801 all-in-one	Structure — Probe station and test system combined	**3D probe-tip XYZ scan**	Geometry — Length, position and planarity

Evidence tiers: delivered, full-load measured, current platform capacity, architecture target - every figure carries one of them.

System structure and the four quantities

Z straightness under full load	< 0.2 um from 0 to 1000 kgf, measured under stepped loading
Chuck flatness under full load	Deviation <= 10 um over a 3 mm stroke, measured at full load
Tilt under full load	About 0.003 deg (~16.2 um across 300 mm), measured at full load
Loading repeatability	Three loadings consistent; symmetric structure, no asymmetric deformation (measured)

Specifications

Chuck force	1000 kgf (about 9.81 kN)	Whole-card simultaneous contact takes roughly 450 kgf under representative conditions (representative calculation: 300,000 pins x an assumed 1.5 gf per pin ~ 450 kgf; the real total depends on simultaneous contact count, per-pin force, overdrive and safety factor)
Maximum pins	300,000	Configured for the target card and motherboard
Structure	PB5801 all-in-one	Probe station integrated with the probe card test system
Load port	Media Loader Port	Carrier in/out and sorting through the loader port
Force display	ChuckForce Display	Live chuck-force readout during touchdown
Device handling	HBM handling	Handling and alignment for high-stack devices
Tip inspection	3D probe-tip XYZ	Length, position and planarity; inspection specifications in the technical agreement
Temperature	Tri-temperature (option)	Range set by configuration and test conditions
POST unit (option)	PinForce measurement and contact check	Sensor and positioning specifications are provided in the technical agreement
Vibration	High-performance isolation platform	Suppresses external vibration during tip measurement
Card compatibility	Vertical, cantilever and MEMS probe cards	Accepts 4.5 / 9 / 12 inch cards
Wafer	300 mm	Automatic probe card exchange cart is optional
Standard software	Live wafer map (PASS/FAIL/BIN, two-colour or multi-colour), manual inspection, offline recipe editing, log and result export	Standard configuration
Operator interface	Colour touch screen, Chinese/English, visual test flow	Standard configuration
Safety	EMO cuts power directly; head plate and loader side cover interlocked (including the optional WAPP door)	Machine safety hardware; this is not a compliance claim
Z straightness under full load	< 0.2 um from 0 to 1000 kgf	Measured under stepped loading; linearity is good
Chuck flatness under full load	Deviation <= 10 um over a 3 mm stroke	Measured at full load, within design spec
Tilt under full load	About 0.003 degrees, roughly 16.2 um across 300 mm	Measured at full load; acceptance limits are defined in the technical agreement
Loading repeatability	Consistent across three loadings; symmetric structure with no asymmetric deformation	Measured at full load

Cleanliness and airflow	Built-in FFU / HEPA filtered laminar flow	Limits particles in the test area reaching tips and contacts
Automatic motherboard exchange	Manipulator with Z lift and horizontal arm, plus a multi-unit storage rack	Optional; swaps between several motherboards

Test workflow

01	Confirm card and fixture	Define card structure, datum, load range, inspection area and safety conditions.
02	Load and image	Apply the recipe and capture tip, contact or probe-mark images.
03	Analyze XYZ and load	Calculate position and load, then flag locations outside project limits.
04	Correlate electrical results	Link PCT5801 coordinates and judgements to a traceable retest conclusion.

Configuration and acceptance notes

Design rationale — Adapted to Accretech UF3000 / UF3000ex and TEL P-12XL probe stations; chuck force limits high-pin-count cards on those platforms, which is why the 1000 kgf dedicated machine was built.

Full-load rigidity, measured — Measured under stepped loading to 1000 kgf: Z-axis straightness below 0.2 um, chuck flatness deviation within 10 um over a 3 mm stroke, tilt about 0.003 degrees, three loadings consistent with no asymmetric deformation. The measurement method, rig and full records are shared in technical discussions.

Data linkage — Probe-tip XYZ, load, images and verdicts map to PCT5801 anomaly channel coordinates for localisation and re-verification.

Acceptance — Fixtures, algorithms, thresholds, repeatability and task time are confirmed item by item on real samples during FAT/SAT.

Project delivery

Sample evaluation → Technical agreement → FAT → SAT

Contact

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Every figure in this sheet carries its basis and evidence tier and is provided for technical evaluation; the configuration, performance and acceptance of a formal project follow the technical agreement both sides confirm. Specifications may change with product iteration.