

Automated Test System **ATS-8000A**

Advanced TLP/HMM/HBM Solutions



YouTube <https://youtu.be/B7SaPfdXRvk>

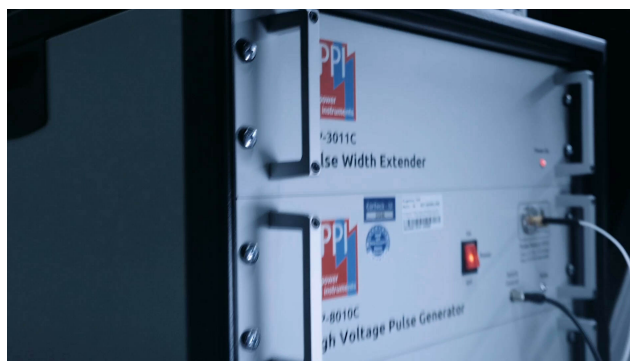
Direct Video Download to Avoid YouTube: https://www.hppei.de/files/HPPI_sm.m4v

1 Features

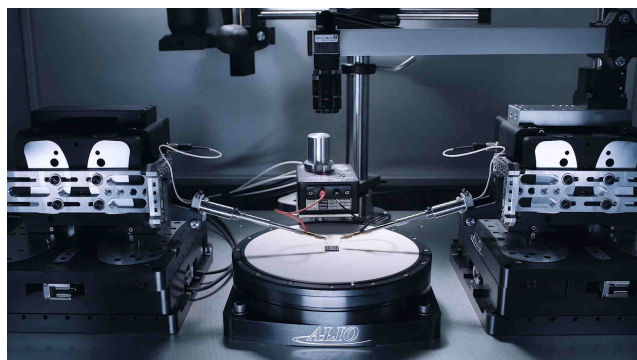
The ATS-8000A test system is a fully automated, dynamic flexible pitch 2-pin or fixed pitch Kelvin-type probing solution for HBM, TLP, VF-TLP, HMM and CC-TLP on package- and wafer-level. Future extension for CDM is optional.



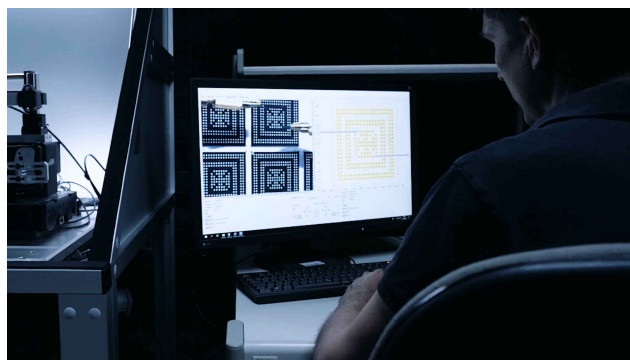
(a) Overview



(b) HPPI pulse generator



(c) Probstation designed for super fast throughput



(d) Software

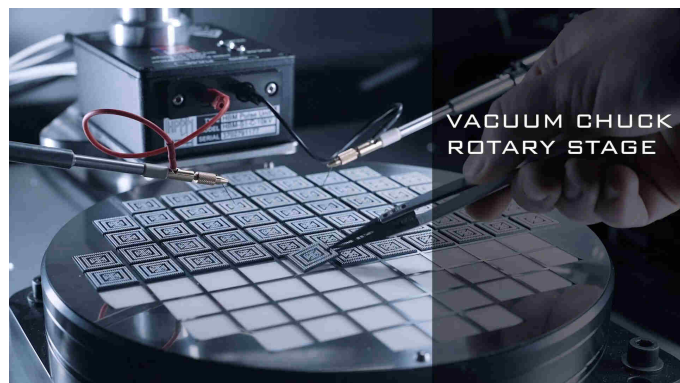
Figure 1: Automated test system ATS-8000A

Automated Test System **ATS-8000A**

Advanced TLP/HMM/HBM Solutions

1.1 Vacuum Chuck Rotary Stage

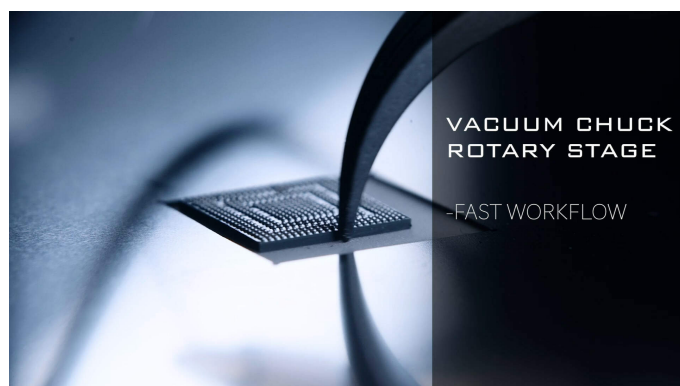
The vacuum rotary stage can be configured for any package shape, any package size and wafers.



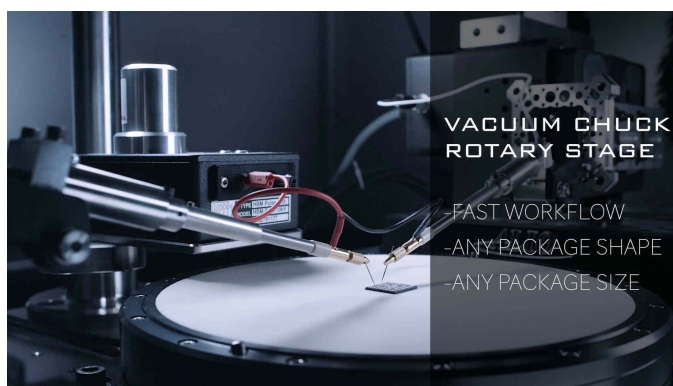
(a) Vacuum chuck



(b) Rotary stage for continuous, fast turning



(c) Fast workflow



(d) Vacuum chuck for any package shape, any package size and wafers

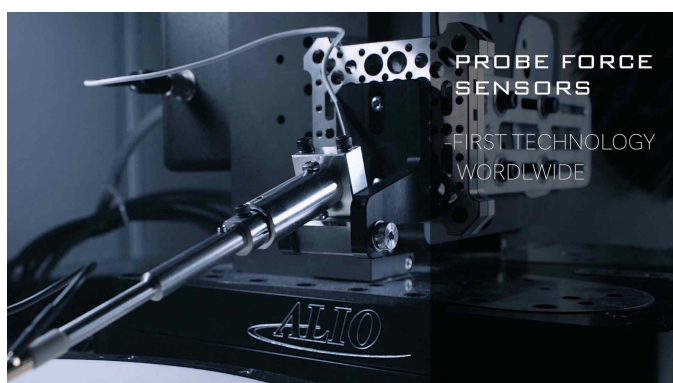
Figure 2: Vacuum chuck rotary stage

1.2 Probe Force Sensors

The probe force sensors ensures maximum probe tip life time and avoid job interruption.



(a) Precision milli-Newton probe force sensor



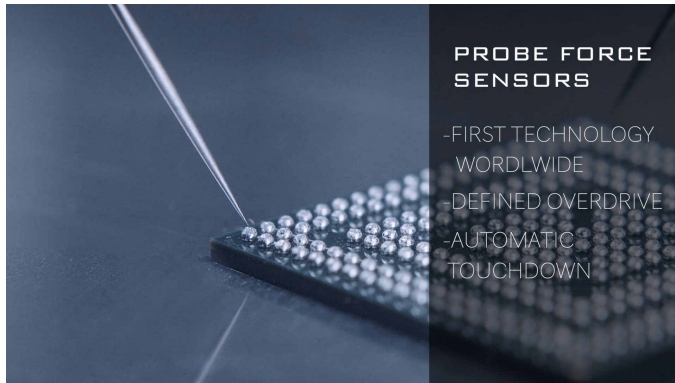
(b) First technology worldwide

Figure 3: Probe force sensors

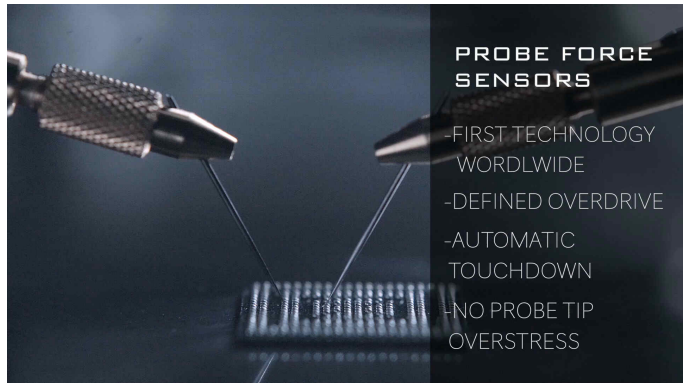
Automated Test System **ATS-8000A**

Advanced TLP/HMM/HBM Solutions

1.2.1 Probe Force Sensors: Defined Overdrive, Automatic Touch Down, No Probetip Overstress



(a) Defined overdrive and automatic touch down at milli-Newton accuracy



(b) No probetip overstress

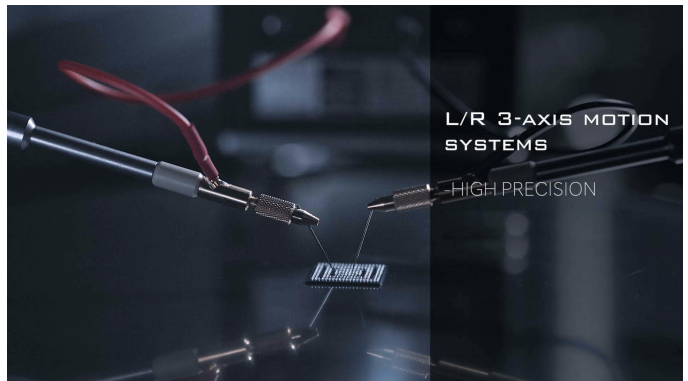
Figure 4: Probe force sensors

1.3 L/R 3-Axis Motion Systems

The 3-axis motion systems and rotary stage are designed for ultra-fast speed to maximize throughput.



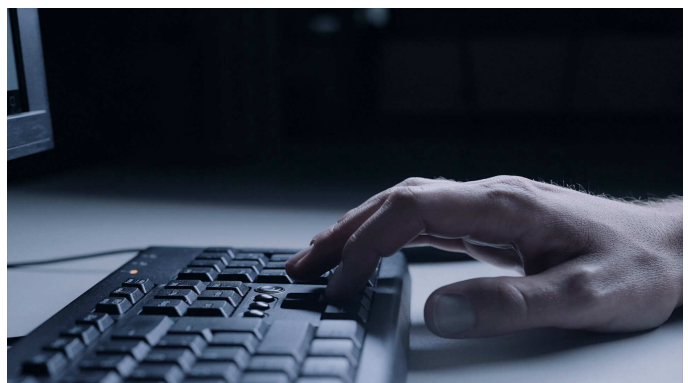
(a) Left and right 3-axis motion system



(b) High precision



(c) Super fast motion for high throughput



(d) Easy and automatic movements

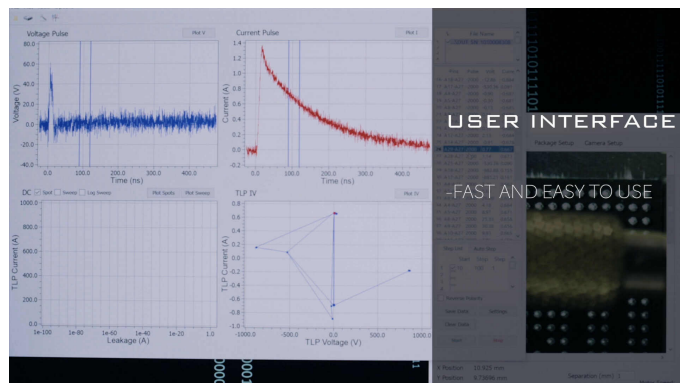
Figure 5: L/R 3-axis motion systems

Automated Test System **ATS-8000A**

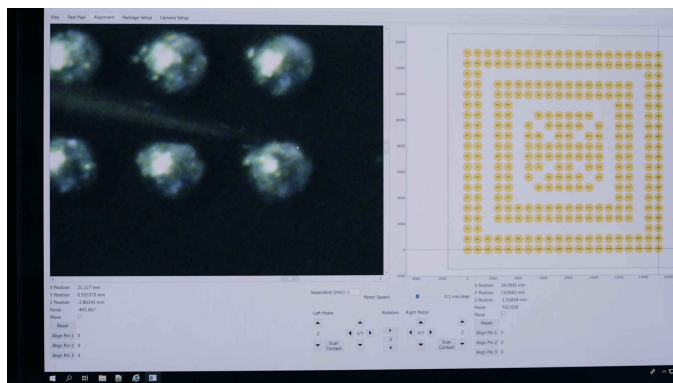
Advanced TLP/HMM/HBM Solutions

1.4 User Interface

The user interface and data management is based on HPPI standard software.



(a) Fast and easy to use



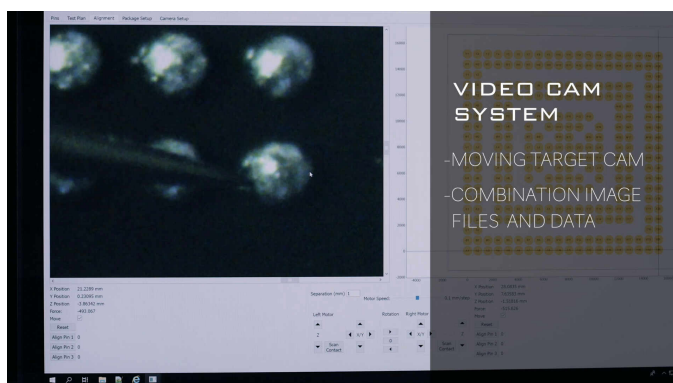
(b) Graphical test definition

Figure 6: User Interface

1.5 Video Cam System



(a) Moving target cam



(b) Combination image files and data

Figure 7: Video cam system

1.6 Highlights

Easy to use, rugged high quality components, high throughput.

2 Specifications

2.1 System Specifications

Parameter	Value	Unit	Remarks
XY-Stages			
XY-Travel	150	mm	between hard stops
Resolution	5	nm	
Bidirectional Linear Repeatability	± 30	nm	
Linear Displacement Accuracy	± 3	μm	

Table continued on next page ...

Automated Test System **ATS-8000A**

Advanced TLP/HMM/HBM Solutions

... Table continued from previous page

Parameter	Value	Unit	Remarks
Orthogonality	20	"	
Maximum Velocity	0.4	m/s	
Maximum Acceleration	0.2	G	
Maximum Payload Capability	12	kg	
Z-Stages			
Z-Travel	24	mm	between hard stops
Resolution	5	nm	
Bidirectional Linear Repeatability	±75	nm	
Linear Displacement Accuracy	±5	µm	
Maximum Velocity	0.1	m/s	
Maximum Acceleration	0.5	G	
Payload	8	N	nominal, incl. probe arm fixture
Minimum to Maximum Payload Range	4-12	N	incl. probe arm fixture
Power-Off Position	Up		stage moves to upper top position
Z-Stage Touch-Down Needle Force Sensors			
Resolution	0.1	mN	
Relative Accuracy	1	mN	after touch-down reference setting
Minimum Readout Force	-670	mN	equivalent to probe arm weight
Maximum Readout Force	410	mN	touch-down overdrive
Maximum Overload Force	5	N	mechanical overload protection
Force Sampling Interval	20	ms	depending on software readout
Ceramic Compound Vacuum Chuck			
Outer Diameter	240	mm	
Rotary Stage for Ceramic Compound Vacuum Chuck (optional)			
Outer Diameter	240	mm	
Bidirectional Angular Repeatability	±0.5	"	
Resolution	0.003 - 9.0	"	
Encoder Line Count	36000	lines/rev	
Axial Runout	10	µm	
Radial Runout	10	µm	
Wobble	15	"	
Maximum Velocity	1800	°/s	
Maximum Acceleration	> 3600	°/s ²	
Maximum Load (Axial)	8	kg	
Maximum Load (Radial)	8	kg	
Moving Mass	2.9	kg	excl. vacuum chuck assembly
Rotating Mass Moment of Inertia	14000	kg mm ²	excl. vacuum chuck assembly
Moving Target Video Camera			
Resolution	18.1	MPix	color
Frame Rate	21	fps	
Focal Length	25	mm	
Maximum Diameter (Ratio)	1 : 1.8-16		
Minimum Focus Distance	0.1	m	
Shooting Range at Minimum Focus Distance	27.5	mm	vertical
	36.7	mm	horizontal
	46	mm	diagonal
ATS-8000A Platform Size			
Test Platform Size	1000 mm x 800 mm x 1524 mm		W x D x H, see Fig. 8
Weight	160	kg	

Table 1: System Specifications ATS-8000A

Automated Test System **ATS-8000A**

Advanced TLP/HMM/HBM Solutions

2.2 Physical Dimensions

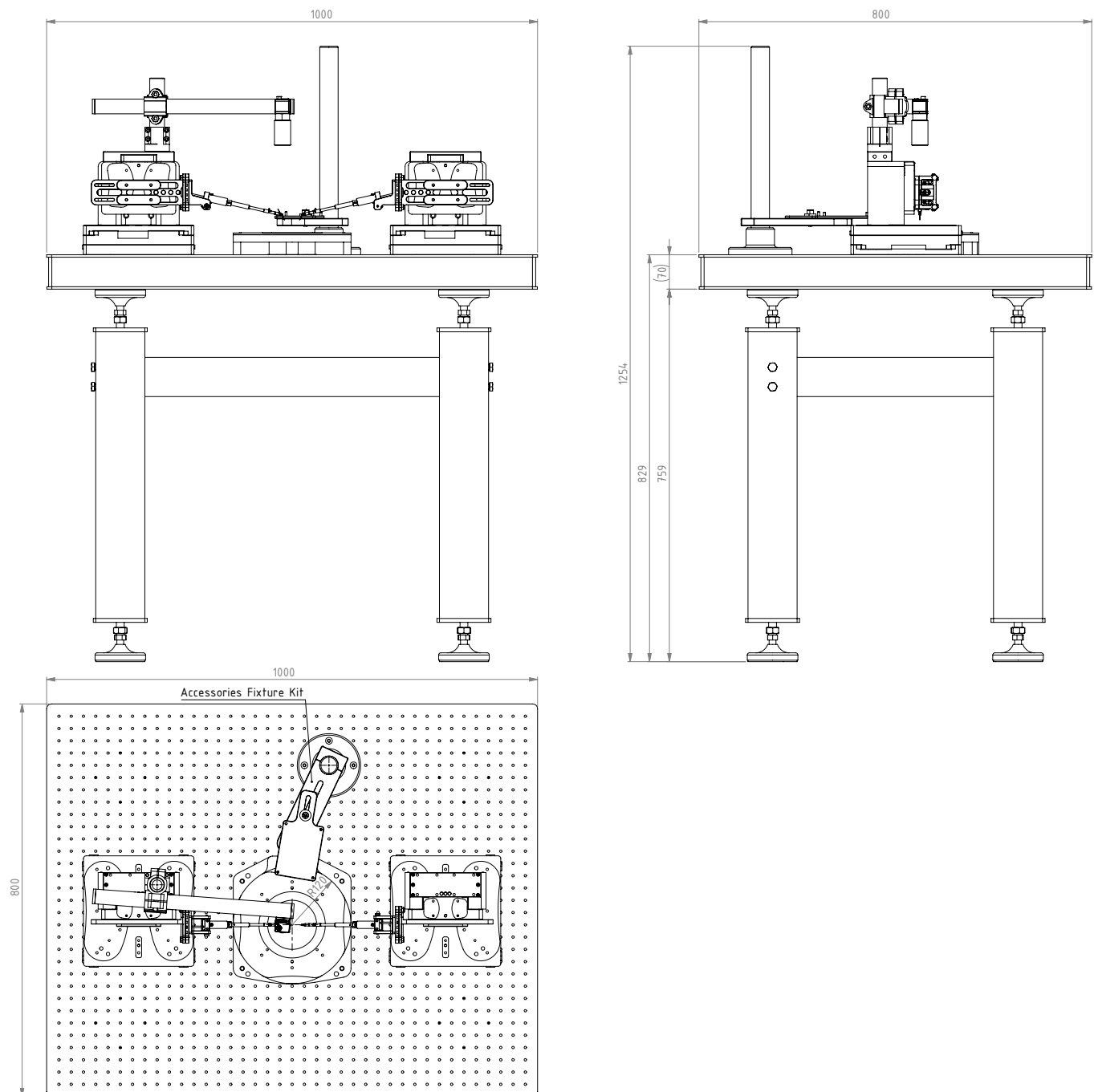


Figure 8: Physical dimensions in [mm]. Note: A darkbox is not included in the ATS-8000A system.

Automated Test System **ATS-8000A**

Advanced TLP/HMM/HBM Solutions

3 Ordering Information

Pos.	Description	Part No.
01	<p>Automated Test System:</p> <ul style="list-style-type: none"> • Two 150 mm X/Y-stages , absolute encoder • Two 24 mm Z-stages, absolute encoder <ul style="list-style-type: none"> - Probearm fixture platform - Touch-down probe needle force sensor • 2 x TPA-GFG probe arm kit • Ø 240 mm ceramic compound vacuum chuck • Optional: Ø 240 mm rotary stage, non-stop rotation, absolute encoder for vacuum chuck • Moving target video camera system • Motion controller • Honeycomb breadboard 1000 mm x 800 mm x 70 mm • Accessories fixture kit • Table support • HPPI automation software <p>Note: Darkbox not included.</p>	ATS-8000A

General

The product data contained in this data-sheet is exclusively intended for technically trained staff. You and your technical departments will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to such application. Our products are solely intended to be commercially used internally and should not be sold to consumers. This data-sheet is describing the specifications of our products for which a warranty is being granted by HPPI GmbH. Any such warranty is granted exclusively pursuant the terms and conditions of the respective supply agreement. There will be no guarantee of any kind for the product and its specifications. For further information on technology, specific applications of our product, delivery terms, conditions and prices please contact HPPI:

High Power Pulse Instruments GmbH
 Stadlerstrasse 6A
 D-85540 Haar, Germany
 Phone : +49 (0)89 8780698 - 440
 Fax : +49 (0)89 8780698 - 444
 E-Mail : info@hppi.de

Due to technical requirements our products and/or their application may be harmful. For information please read carefully the manual or contact HPPI. Safety notes in the manual will inform you about possible risks that result from any foreseeable application of our products. Changes of this data-sheet are reserved.