

Condor Sigma HF

Higher force, higher speed, larger working area



setting
new
standards



XYZTEC

● Technology leader in bond testing worldwide

Condor Sigma HF

**5 times
higher
force**



Exceptional system stiffness of 0.1 mm per 1000 kgf

Condor *Sigma High Force*

The Condor *Sigma HF* sets a new industrial standard by combining many new advances and features with the unique and proven strengths of our existing Condor series.

Whether you need a dedicated or multipurpose bond tester, the Condor *Sigma HF* is the best choice. The *Sigma HF* features unparalleled accuracy, the best ergonomics, highest throughput, full automation capability, maximum flexibility, life time support and the lowest cost of ownership.

For forces up to 1000 kgf

XYZTEC has developed a new test system capable of applying accurate shear, pull and push forces up to 1000 kgf. The new Condor *Sigma HF* includes full 360° shear tool rotation with vectored shear direction. This makes the new Condor *Sigma HF* the ideal test tool for IGBT power modules and other high force application applications.

A range of tooling ensures precise load application to the test point. Quick release sample clamping options ensure accurate testing together with rapid load and unloading.

Larger working area

The *Sigma HF's* test volume of 500 mm in X and Y combined with 200 mm in Z provides the flexibility to test multiple samples. Larger travel ranges for applications including battery modules and large Panel Level Packaging (PLP) are possible on special request.

Positional accuracy

The *Sigma HF's* system stiffness of 0.1 mm / 1000 kgf tool to work holder sets a new standard in tester rigidity. High tool to sample positional accuracy enables automation of the most complex circuit architecture. Bond strength is measured with an accuracy of $\pm 1\%$.



Large working area

**4 times
larger
working area**

**10 times
higher
axis speed**



Six sensors RMU, up to 200 kgf: Changing cartridges manually no longer required

**up time
(OEE)
above 90%**



Most rigid test head in the industry with up to five perpendicular cameras

High resolution and soft landing

The *Sigma* family offers digital temperature correction and 24 bit resolution to ensure the accuracy and repeatability of measurement results. The X, Y- and Z stage speeds can be set between 0 mm/s to 500 mm/s while still producing its 1000 kg force with micron precision. Intelligent software enables extremely rapid “fly” movements and automatic deceleration as the test area is approached. The large stage travel distances, rapid power up and multiple home positions are also standard features of the *Sigma HF*. Industry leading shear sensors have programmable landing forces and shear height accuracy confirmed with laser measurement.

Application flexibility

Force

The Condor *Sigma HF* system offers superior flexibility with sensors for shear, push pull and tool selections from 2.5 gf up to 1000 kgf.

Flexible tool heads

The open *Sigma* head interface is suitable for either high force single head measurement units or our state of the art Revolving Measurement Unit (RMU) for forces up to 200 kgf. The RMU can be configured with six sensors in any combination of pull or shear and ranges from 2.5 gf to 200 kgf. The sensors are permanently and safely fixed to the machine, requiring no warm up time and are always ready to test at the simple click of button.

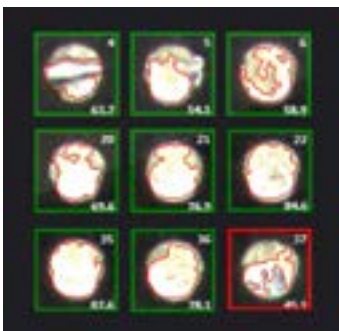
AOI measuring toolkit

The measurement tool kit offers a variety of options for fully examining samples. The toolkit makes use of advanced image processing software and our advanced high-resolution cameras. A few of the features that can be measured automatically include; largest distance, smallest distance, object area, distance between objects, angle between objects and wire thickness.

Other innovative solutions

- Self-aligning shear tool (patented)
- Deep access tool to enable complex sample architecture
- Tweezers, USB fully programmable or mechanical with optional pneumatic actuation

**stop guessing
start
auto grading**



High speed fully automatic grading

Automation

Complex samples can be tested fully automatically. Production tolerances in bond and wire positions being automatically corrected with multiple nested fiducial and individual wire detect capability. Automation programming is structured for easy generation and maintenance.

Auto grading

XYZTEC's advanced image processing software provides the option to automatically grade sheared samples. Using optical inspection, the area of bulk material remaining is calculated as a percentage of the whole. This result and a picture with graphical overlay are stored on the system. Automatic grading removes operator influences improving accuracy and reduces distribution.

Built-in image capture and automation camera

The standard configuration contains a rigidly fixed perpendicular automation camera at a small offset from the test point with a choice of 3 magnifications and optical resolutions down to 1.5 μm .

Unique to the *Sigma* family, a second perpendicular camera can be added enabling you to select from multiple magnifications. This is particularly useful when you need a large field of view for automation as well as a high magnification for image capture.

For image capture and pattern recognition, coaxial and diffused illumination work separately or in combination to bring out the features of interest.

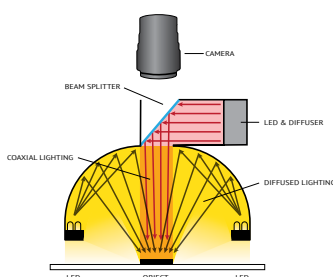


Diffused light



Coaxial light

**maximize
your tests per
hour (UPH)**



Built-in dual light camera with diffused light and coaxial light

Safeguarding

Higher forces require more extensive safety precautions. The Condor *Sigma HF* system is fitted with full safety guarding that allows for both production line flexibility and ease of use. *Sigma HF* access points are designed to protect the operator and provide ergonomic access for easy sample loading.

Specifications

Force sensors	Single measurement units (1 sensor)	500	kgf
	Single measurement units (1 sensor)	1000	kgf
	Shear sensor deep access	80	mm
	Revolving measurement units (up to 6 sensors)	up to 200	kgf
	Ranges 10gf, 100gf, 1kgf, 10kgf, 100kgf, 200kgf		
	Resolution	24	bit
	Accuracy	±1	%
	Minimum landing force	2.5	gf
	Correlation with other testing systems		
	Digital correction of temperature and creep		
Calibration weights OIML class M1 or NIST class 1			
Stages	Resolution of built in optical linear encoders	10	nm
	X travel, Y travel	500	mm*
	Z Travel	200	mm
	Axis (X,Y & Z) speed	500	mm/s
	Hook concentricity	±10	µm
	Software hook concentricity	±5	µm
	Tool rotation accuracy	±1	°
Mechanical	Footprint X & Y	1200	mm
	Height	2000	mm
	Weight	1000	kg
Controls	Ergonomic layout to SEMI S8		
	Two ergonomic joysticks with 6 quick access buttons each		
	LED illumination		
Software	Fully compatible with <i>Sigma</i> software		
	Supports Microsoft Windows 7/8/10™, 32 and 64 bit systems		
	Easy to learn intuitive graphical user interface		
	Minimum number of mouse clicks		
	Customizable screens, optimized for wide and touch screens		
	Integrated report editor and data export		
	Easy data sorting, grouping and filtering		
	Integrated SPC and system GR&R analysis		
Multiple languages, multiple user network environment			
Export to XLS, DOC, PPT, PDF, XPS, CSV, XML, DBF, etc.			
Services	SECS/GEM**		
	3 phase 400VAC + compressed air		
Cameras	Front tool camera	5 MP	High speed
	Side tool camera	5 MP	High speed
	Fiducial camera	5 MP	High speed

Specifications are subject to change without prior notice.

* XYZTEC also offers Condor *Sigma* platforms with larger axis strokes for 12 inch (300mm) wafer testing and other applications.

** Contact XYZTEC for more information and options for your factory.

stay
up-to-date
free software
updates



XYZTEC's international team for sales and service and our international offices

global
presence
local
support



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