Condor *Sigma MAG*

Magazine handler for automated lead frame testing

XYZTEC

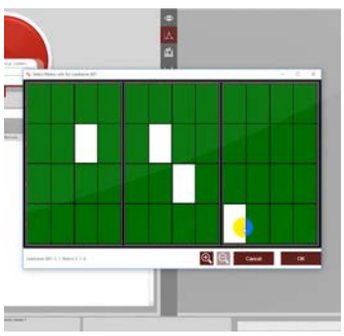
Technology leader in bond testing worldwide

Condor *Sigma MAG*

eliminate human error and reduce production cost

Stacked magazine holder to support lead frames, cassettes, magazines, PCB's, Flex and boats

high positioning accuracy with linear encoders



Slot and device selection by user, fixed locations or random locations or SECS/GEM (remote) controlled locations

Fully automatic lead frame tester

XYZTEC is offering the largest improvement in lead frame testing in years. By combining our state of the art Condor *Sigma* with an independent lead frame loader/un-loader, we can now offer our customers a hands-off bond test solution.

Flexibility

The *Sigma MAG* supports multiple types of lead frames, cassettes, magazines, PCB's, Flex and boat carriers. Its optional automatic width adjustment ensures fast, simple and repeatable production changeovers.

Accurate positioning

Tool to test point alignment both before and during a test has a direct influence on the quality of your test data. Accurate alignment depends on tool positioning and system stiffness. Initial alignment can be performed manually by an operator. However, automation provides greater precision and consistency. The *Sigma's* fiducial pattern recognition capability combined with its precisions X, Y and Z stages consistently maintains initial alignment to within ± 10 µm over its entire test volume. During the test, the system stiffness of 1 µm/10 kg is maintained to achieve best alignment possible. Sample clamping is a significant part of system stiffness. XYZTEC offers a wide range of standard and customized clamping solutions optimized to complement our system stiffness.

Easy programming

Our sophisticated menu-driven software is easy to program and modify. One benefit of the *Sigma* software is that it is completely open. This allows operators to customize it for precise indexing and the widest range of tests. The Condor *Sigma* software features onboard graphics and intelligent wizards that provide intuitive operator control.

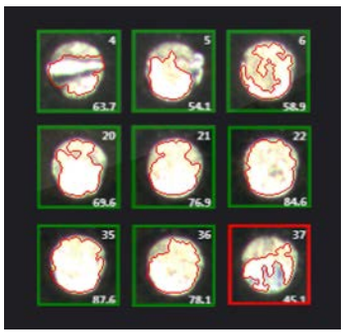
Wire pull, die shear

The *Sigma MAG* is capable of a wide variety of test types. On lead frames, the most common applications are wire pull, gold ball shear and die shear. The *Sigma MAG* can also be used for a number of other tests such as loop height measurements. The *Sigma MAG* meets or exceeds MIL-STD-883, Test Method 2011 (destruct bond pull), Method 2019 (die shear) and Method 2023 (non-destructive bond pull), along with a number of other industry standards.

reduce the standard deviation of the tests

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

stop guessing start auto grading



High speed fully automatic grading

Full operator control

The Condor *Sigma MAG* is designed to function as a fully automatic system. All devices on a lead frame can be tested automatically or the operator can easily select from any device in the matrix that appear on the test screen. Alternatively, the *Sigma MAG* can be used in a manual mode for a quick engineering evaluation.

Automatic width adjustment

The design and size of lead frames can vary significantly. Therefore, the system is designed to easily accommodate lead frames up to 75x320 mm. For customers with frequent production changeovers, an optional automatic width adjustment is available. In order to obtain accurate measurement results, it is necessary to accurately clamp the sample. Despite the system's high-speed capability, the *Sigma MAG* indexes, positions and clamps each sample with extreme accuracy.

Revolving Measurement Unit

Lead frames often require multiple types of tests. The multiple load cell (sensor) cartridge RMU allows customers to permanently and safely add up to 6 different shear or pull sensors to their system. The sensors require no warm up time when switching between tests. Each sensor is always active, even when that particular sensor is not being utilized. Customers can choose from a wide range of tooling options and load cell values. Because of the RMU's unique rotational functionality, automation routines can include multiple test types without tooling or sensor changeovers.

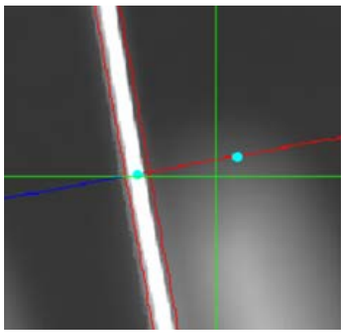
Automation

Even the most complex samples can be fully tested using the *Sigma MAG's* automation capability. Utilizing the Condor *Sigma's* RMU, multiple pull and shear tests (any force range) are possible for each automation program. Comprehensive fiducial mark analysis and wire detect algorithms correct for any position fluctuations on your sample. The open programming structure allows for multiple nested fiducials to guarantee positional accuracy. For area interconnects, matrix programming allows the operator to select the device(s) on a row or column basis. The lead frame loader is fully integrated within the Condor *Sigma's* automation programs providing the operator full flexibility. Magazine slots can be selected by the user or through the use of SECS/GEM.

Auto grading

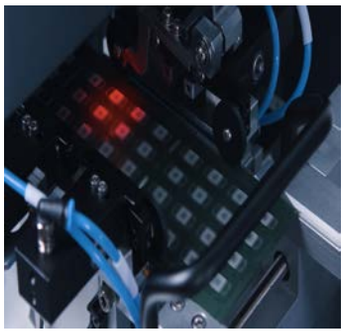
XYZTEC's advanced image processing software provides the option to automatically grade sheared samples. Through the use of optical inspection, the area of bulk material remaining is calculated as a percentage of the whole. This result and a picture with graphical overlay are stored in the system. Automatic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

no longer touch your samples



Detected wire position and the offset to the test position

high resolution automatic image capturing



Barcode reader

Automatic hook concentricity correction

In addition to the *Sigma's* mechanically adjustable hook concentricity alignment feature, XYZTEC's software now offers automated hook concentricity correction. Concentricities of ±5µm are easily achieved and maintained.

Wire detect

By measuring the exact position of each wire, this option enables fully automatic pull testing of fine pitch wires that are out of position due to process tolerances or part handling. Flexible detection algorithms enable setup for a wide variety of sample types.

Export functionality

One of the many attributes of the *Sigma* family is its free, built-in and easy-to-use data export editor. This feature enables engineers to save their own reports in almost any file format. The Condor *Sigma* is unique in its ability to share a centralized database with other testers. Data can be stored locally or networked to a customer's in-house database program.

Camera options

XYZTEC vision systems are ideal for providing high-resolution images. These images can be used for customer presentations, operator training, or failure analysis reporting. Each system can be equipped with up to 3 cameras. Examples include; high frame-rate trinocular microscope camera, side-view camera and multiple field of view look down (perpendicular) cameras that are offset from the tool position. The *Sigma* can also be equipped with a high-resolution camera system utilizing Mitutoyo optics for even higher resolution images.

Measuring toolkit

The measurement tool kit offers a variety of options for fully examining samples. The tool kit 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.

Barcode reader

Many of XYZTEC's customers barcode their products. *Sigma MAG* automation programs can be selected and initiated manually or via a barcode reader, further minimizing handling risks and human error.

SECS/GEM

SECS/GEM is an equipment interface protocol for equipment-to-host data communications in the semiconductor industry. As market leader in bond testing, we often get requests to interface with the factory host. Among other protocols, XYZTEC offers SECS/GEM communication directly in the Condor *Sigma* software.

Specifications

Lead frames	Width	25	mm	to	100	mm
	Length	140	mm	to	240	mm
	Thickness	0.1	mm	to	5	mm
	Length up to 300 mm possible with just one camera					
Cassettes	Width	30	mm	to	105	mm
	Length	145	mm	to	250	mm
	Height	60	mm	to	200	mm
	Number of slots customizable					
Force sensors	Revolving measurement units (up to 6 sensors)	up to 200	kgf			
	Ranges 10gf, 100gf, 1kgf, 10kgf, 100kgf, 200kgf					
	Maximum shear force	200	kgf			
	Maximum Pull and Push force	200	kgf			
	Accuracy	±0.075	%			
	Resolution	24	bit			
	Minimum landing force	2.5	gf			
	Correlation with other testing systems					
	Digital correction of temperature and creep					
	Calibration weights OIMI class M1 or NIST class 1					
Stages	Resolution of built-in optical linear encoders	30	nm			
	X travel	600	mm*			
	Y travel	168	mm*			
	Z Travel	168	mm			
	Maximum axis (X,Y & Z) speed	50	mm/s			
	Hook concentricity	±10	µm			
	Tool rotation accuracy	±1	°			
Mechanical	Footprint X	1800	mm			
	Footprint Y	900	mm			
	Height	1100	mm			
	Weight	160	kg			
Controls	Ergonomic layout to SEMI S8					
	Microscope moves in focal arc and swivels to side for easy access					
	Microscope adjustable in X & Y and through complete Z travel					
	Keyboard drawer					
	Two ergonomic joysticks with 6 buttons each					
	LED illumination					
Clamping	Maximum flexibility for lead frames					
	Compatible with previous XYZTEC and competitor tooling					
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	Electric 110-240V single phase, air required					
	SECS/GEM**					

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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