



Condor Sigma MAG is a fully automatic magazine handler for lead frame testing

Condor Sigma MAG

Magazine handler for automated lead frame testing

Eliminate human error and reduce production cost

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

High positioning accuracy with linear encoders

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 $\pm 10 \mu\text{m}$ over its entire test volume. During the test, the system stiffness of $1 \mu\text{m}/10 \text{kg}$ 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.

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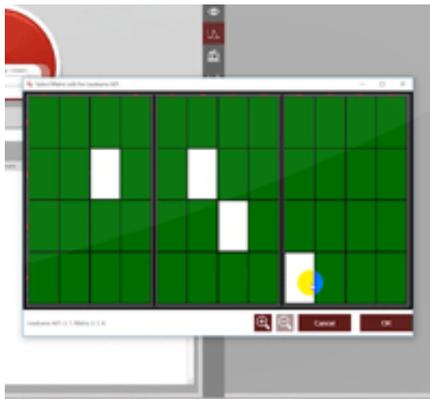
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Bond testers

- Condor *Sigma*
- Condor *Sigma Lite*
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Slot and device selection by user, fixed locations or random locations or SECS/GEM (remote) controlled locations

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.

Full operator control

Reduce the standard deviation of the tests

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.

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

Revolving Measurement Unit

Lead frames often require multiple types of tests. The multiple load cell (sensor) cartridge **Revolving Measurement Unit (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.

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 $\pm 5\mu\text{m}$ are easily achieved and maintained.

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High speed fully automatic grading

Auto grading

Stop guessing start 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.

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

High resolution automatic image capturing

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.

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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.



Pick & Place

Pick & Place

The optional Pick & Place functionality allows to fully automatically test a whole waffle tray of samples without any operator intervention. The machine picks any sample from the waffle tray and places it precisely in a clasper. After the tests are finished, the part is placed back on the waffle tray. The advanced shear tool cleaner makes sure that no test residue remains on the tool or sample. The Pick & Place functionality is fully programmable in the automation software.

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

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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					

[Click here](#) to check the specifications and compare the Sigma MAG with the other Condor systems.

Condor Sigma flyer

[Click here](#) to download the [Condor Sigma brochure](#) or the [Condor Sigma Lite brochure](#), the [Condor Sigma W12 brochure](#) or the [Condor Sigma Vision brochure \(PDF\)](#).

Contact us

Did we catch your attention? Please [contact us](#) for more information, to request a demonstration or a quotation.

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