

# Technical Data Sheet

## Standard Sigma Bondtester

The new, compact Sigma bond tester was developed for the simple and fast performance of mechanical tests in non-destructive and destructive use cases.

The unique design, which is characterized by its space-optimized dimensions and modular structure, offers the best user-friendliness and flexibility for both laboratory applications and series production applications. The rotating measurement unit (RMU) offers space for six sensors with different force ranges.

In addition to the classic pull and shear tests, the Sigma is versatile: with a portfolio of over 18 different mechanical material tests. All the different test methods are precisely tailored to the practical requirements of material characterization, process monitoring and quality control.

The modular design of the machine makes it possible to make changes, extensions and customer adaptations of any kind without having to change the essential design and thus the recognition value of the machine.

The graphical user interface (GUI) of the Sigma is clearly divided into various control panels, which are used for intuitive processing and are accessible via a fixed menu bar that is visible at all times. The logically structured software interface supports the user in creating their own test methods and fracture codes for subsequent grading.

The Sigma can be operated in manual, semi-automated and fully automated mode. Many different modules are available to the operator for setting up customer-specific automation, which can be easily linked together. No knowledge of programming languages is required.

### Integrated image and video capture

The standard configuration includes a vertically looking camera permanently installed on the frame of the machine at a short distance from the test point. This can be used for taking images before and/or after the bond tests, but also for programming automation. Three magnifications are available to the user with an optical resolution of 1.5 µm. The xyztec software supports up to three live camera views simultaneously.

### Soft landing and high accuracy

The Sigma can perform a wide range of tests at forces from < 0.1 gf to 200 kgf. The digital temperature correction and the 24 bit AD converter ensure an accuracy and repeatability of ± 0.075 %. The axes (x,y, and z) can be moved from 1 mm/s to 50 mm/s depending on the requirements and corresponding settings in the software. The joystick sensitivity integrated in the intelligent software enables fast movements and automatic deceleration when approaching the test area.

### Enhancement options:

- Handling systems
- Integrated MES interface: SECS/GEM, GEM300
- Compressed air resp. Vacuum cleaning device (e.g. for solder ball shear tests)
- Testing at elevated temperatures (up to 600 °C)
- Image and pattern recognition software package
- Ergonomic SEMI S2 housing
- Camera solutions of various magnifications
- Grey value correlation analyses for assessment of creep behavior

### Characteristics and technical specifications

| Force sensors      |                                         |
|--------------------|-----------------------------------------|
| Ranges             | 100 gf, 1 kgf, 10 kgf, 100 kgf, 200 kgf |
| Max. shear force   | 200 kgf                                 |
| Max. pull force    | 200 kgf                                 |
| Accuracy           | ± 0,075 %                               |
| ADC resolution     | 24 bit                                  |
| Min. landing force | 2,5 gf                                  |

| Axes                           |         |
|--------------------------------|---------|
| Resolution of optical encoders | ± 30 nm |
| x-axis                         | 370 mm  |
| y-axis                         | 168 mm  |
| z-axis                         | 168 mm  |
| Axis speed                     | 50 mm/s |
| Hook concentricity             | ± 10 µm |
| Rotational accuracy            | ± 1°    |

| Dimensions  |        |
|-------------|--------|
| x footprint | 620 mm |
| y footprint | 558 mm |
| Height      | 608 mm |
| Weight      | 80 kg  |

| Software                                                               |  |
|------------------------------------------------------------------------|--|
| Supports from Microsoft Windows 7, 32 and 64 bit systems               |  |
| Intuitive, no special knowledge required                               |  |
| Customization of the user interface according to customer requirements |  |
| Integrated Report editor and data export                               |  |
| Integrated SPC and GR&R analyses                                       |  |
| Different languages and user hierarchies                               |  |
| Export to xls, docx, pptx, pdf, xps, csv, xml, etc.                    |  |
| Easy data sorting, grouping and filtering                              |  |
| Customizable screens, optimized for wide and touch screens             |  |

| Handling and control                                     |  |
|----------------------------------------------------------|--|
| Ergonomic layout according to SEMI S8                    |  |
| Microscope adjustable in height, depth and angle         |  |
| Swivel microscope holder                                 |  |
| Ergonomic joysticks with each 6 buttons for fast control |  |
| LED illumination                                         |  |



# Bond tester Sigma

## Advanced bond tester

- Bond tester for manual, semi-automatic and fully automatic testing
- x stage: 370 mm, y stage: 168 mm
- Force range from 0.075 gf - 200 kgf
- Sensor accuracy of 0.075 %
- Superior axis speed of 50 mm/s
- Compact and modular design



xyztec