

SEMI-AUTOMATED BOND ALIGNER

## **SUSS BA8 Gen4 Pro**

HIGH PRECISION BOND ALIGNMENT AND  
DIRECT BONDING





SEMI-AUTOMATED BOND ALIGNER

## SUSS BA8 Gen4 Pro

### HIGH PRECISION BOND ALIGNER

The BA8 Gen4 Pro bond alignment platform is designed for demanding processes in MEMS and LED production and advanced packaging markets. It accurately aligns substrates and secures their position in fixtures for further process steps. The bond alignment of two wafers is based on the same powerful technology that has proven its value with SUSS MicroTec's mask aligners for mask to wafer alignment.

The platform can be configured as a bond aligner only or as a combination of mask and bond aligner. A direct bonding toolkit offers extra functionality for pre-bonding substrates. In order to enhance direct bonding processes, the BA8 Gen4 Pro can be equipped with an optional toolkit for selective and full-wafer plasma surface activation. It can easily be upgraded with additional functions within a short time. The system handles substrates up to 200mm in size. With its ergonomic operation and intuitive user interface, the BA8 Gen4 Pro is easy to work with and requires only minimal operator training. Its high degree of automation allows for easy operation and an application in labs, research and development as well as small volume production.

#### PRECISION THROUGH FUNCTIONAL FIXTURE DESIGN

The BA8 Gen4 Pro offers a variety of bond fixtures. The symmetric fixture design developed by SUSS MicroTec reduces changes in the wafer position, resulting in significant improvement of alignment accuracy.



Closed Gen4 fixture with symmetric clamp and spacer design (real proximity fixture)



#### HIGHLIGHTS

- + Top-side, bottom-side, IR alignment for flexible configurations
- + Various operation modes for specific process requirements
- + Improved alignment accuracy by assisted or fully automated alignment modes
- + Wedge error compensation
- + Functional fully automated fixture operation
- + Compatible with all SUSS bonders



## ALIGNMENT

### VERSATILITY AND REPEATABILITY

#### VERSATILITY THROUGH SOPHISTICATED ALIGNMENT TECHNOLOGIES

The BA8 Gen4 *Pro* incorporates an intelligent design to achieve high alignment accuracy. SUSS MicroTec's unique wedge error compensation system guarantees highest possible planarity between wafers. A selection of alignment technologies configurable to specific needs makes the BA8 Gen4 *Pro* ideal for a wide range of processes and applications.

#### Top-Side Alignment

The BA8 Gen4 *Pro* can be optionally equipped with either a manual or motorized top-side alignment system which can reach an alignment accuracy down to 1  $\mu\text{m}$ .

#### Bottom-Side Alignment (BSA)

The BA8 Gen4 *Pro* is equipped with bright-field bottom-side microscopes that include an optical magnification switch for a larger field of view, enabling the operator to find and center the target. After switching to high magnification the final high precision alignment is done. The BSA microscope with single-field and split-field features uses high resolution CCD cameras. The unique image storage and real-time image processing is more precise and faster than common cross-hair alignment.

#### Infrared Alignment

Infrared alignment allows for the processing of opaque, yet IR-transparent materials such as GaAs, InP, silicon or adhesives, as used for thin-wafer handling or encapsulation applications. The BA8 Gen4 *Pro* can optionally be equipped with a toolset for either transmissive or reflective IR.

#### REPEATABILITY THROUGH ENHANCED ALIGNMENT MODES

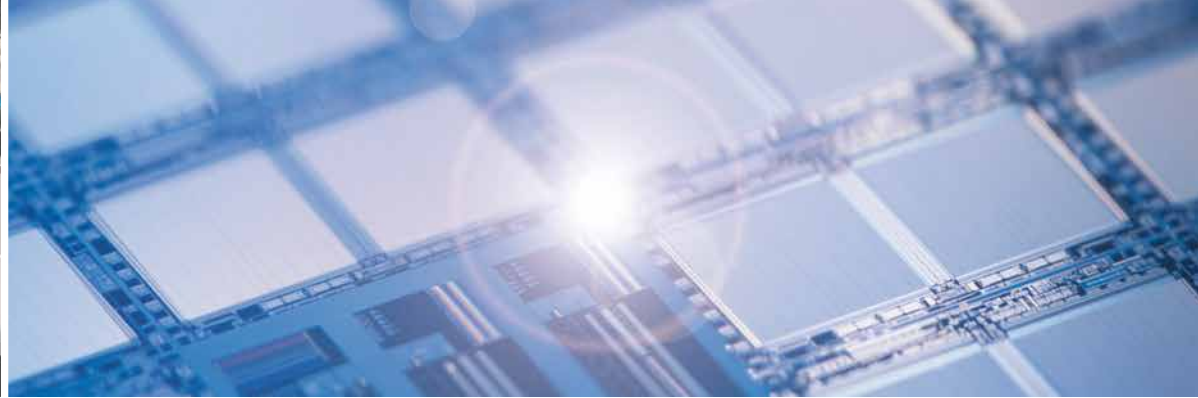
The BA8 Gen4 *Pro* offers various operation modes for specific process requirements. Automated alignment achieves the highest grade of repeatability.

#### Manual and Assisted Alignment

Manual alignment uses either a manual or motorized alignment stage that is precisely operated via micrometer screws or joystick. During assisted alignment, the COGNEX®-based pattern recognition software continuously measures and reports accuracy results to the operator. The fiducials are displayed on a screen.

#### Auto Alignment

Auto alignment is based on a motorized alignment stage. The COGNEX®-based pattern recognition software automatically detects wafer target locations and controls the movement of the alignment stage. Auto alignment couples highest repeatability of process results with optimized throughput and a minimum of operator intervention.



# SUSS BA8 Gen4 Pro

## TECHNICAL DATA

### SUBSTRATES

Wafer size	Up to 200 mm
Square substrate size	Up to 200 x 200 mm

### CONFIGURATIONS

Bond alignment	Standard
Direct pre-bonding	Optional pre-bonding toolkit
Plasma activation	Optional SELECT toolkit
Mask alignment	Optional mask aligner toolkit

### ALIGNMENT

Process Technologies	Top-side, bottom-side, Optional: infrared alignment
Alignment accuracy	Top-side alignment: 1 µm Bottom-side alignment: 1 µm

### ALIGNMENT STAGE

Travel range X	±3 mm
Travel range Y	±3 mm
Travel range Theta	±3°

### WAFER BONDING

Process technologies	Fusion pre-bonding, plasma activation
----------------------	---------------------------------------

### GRAPHICAL USER INTERFACE

Operating system	Windows 7
Programs	Unlimited number of recipes
Operation	Remote access possible

### UTILITIES, DIMENSIONS

Vacuum	< 0.8 bar
Compressed Air	8 bar (116 psi)
Nitrogen	3 bar

### POWER REQUIREMENTS

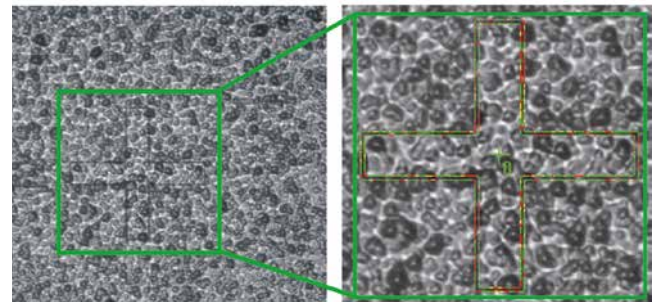
Power	Voltage AC 230 V
-------	------------------

### DIMENSIONS

Width x depth	1350 x 1000 mm = 1.35 sqm
Height	1803 mm incl. top-side microscopes

### OPERATOR SAFETY AND ERGONOMICS

SEMI certificates	S2, S8
EMC	compliant
CE	compliant



Blurred wafer target detected by SUSS pattern recognition software

Data, design and specification depend on individual process conditions and can vary according to equipment configurations. Not all specifications may be valid simultaneously. Illustrations, photos and specifications in this brochure are not legally binding. SUSS MicroTec reserves the right to change machine specifications without prior notice.



Visit [www.suss.com/locations](http://www.suss.com/locations)  
for your nearest SUSS representative or  
contact us:  
**SUSS MicroTec SE**  
+49 89 32007-0 · [info@suss.com](mailto:info@suss.com)

[WWW.SUSS.COM](http://WWW.SUSS.COM)

