DOUBLE-SIDE MEASUREMENT EQUIPMENT

SUSS DSM8 Gen2 | DSM200 Gen2

ALIGNMENT METROLOGY FOR R&D AND HIGH-VOLUME PRODUCTION

SÜSS MicroTec


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ALIGNMENT METROLOGY FOR R&D AND HIGH-VOLUME PRODUCTION

The SUSS DSM offers front-to-back side measurements for a broad range of applications and substrates. Results specify shift, rotation and run-out components of the offset vector. The system requires a remarkably small footprint and by that low cost of ownership. At the same time, it provides reliable and extremely accurate metrology for double-sided alignment and exposure applications, which are frequently used in the manufacturing of MEMS devices, power semiconductors and optoelectronics.

ACCURATE METROLOGY FOR DOUBLE-SIDED SUBSTRATES

SUSS MicroTec has more than 40 years of experience in double-side lithography processes. The processing of double-sided substrates requires accurate measurement to verify front-to-back side alignment. The stand-alone SUSS DSM8 recipe-based system automatically measures and calibrates itself, with manual substrate loading and unloading. This ensures high performance independent of operator skills. The fully automated SUSS DSM200 also features a robotic substrate handling system. In addition, customized handling options are available, including unique measurement chucks. Optional IR illumination enables through-silicon measurement capability.

HIGHLIGHTS

+ ≤0.2 µm measurement accuracy
+ Double-side or single-side alignment measurement
+ Optional IR illumination
+ High throughput and small footprint deliver low cost of ownership
+ Customized substrate handling solutions available

PRECISE DUAL MICROSCOPE METROLOGY

Using a single microscope and looking through a substrate suffers the systematic offsets due to light diffraction and mechanical tolerances. SUSS DSM eliminates this by using double microscope technology to look at alignment features directly and without movement. This system also incorporates Cognex PatMax® image analysis software that delivers optimum precision with industry-proven stability.

ACCURACY VIA TIS COMPENSATION

Eliminating mechanical tool induced shift (TIS) is required for optimum measurement accuracy. The SUSS DSM achieves this by comparing the measurement result of the substrate at 0° with the result at 180°. Image registration of the rotated target images, and accurate offset calculation is performed with the capabilities of Cognex PatMax®.

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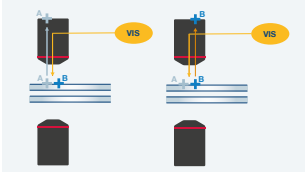
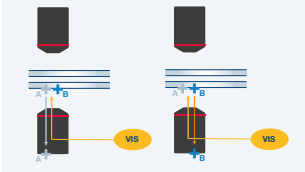
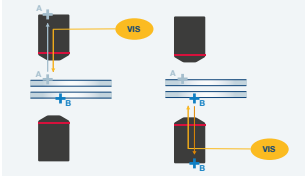
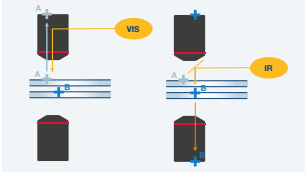
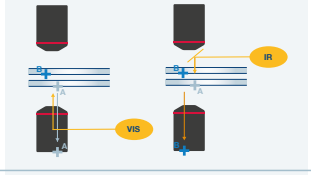
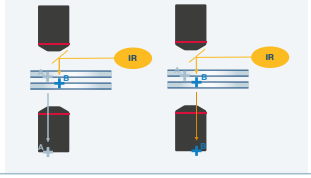
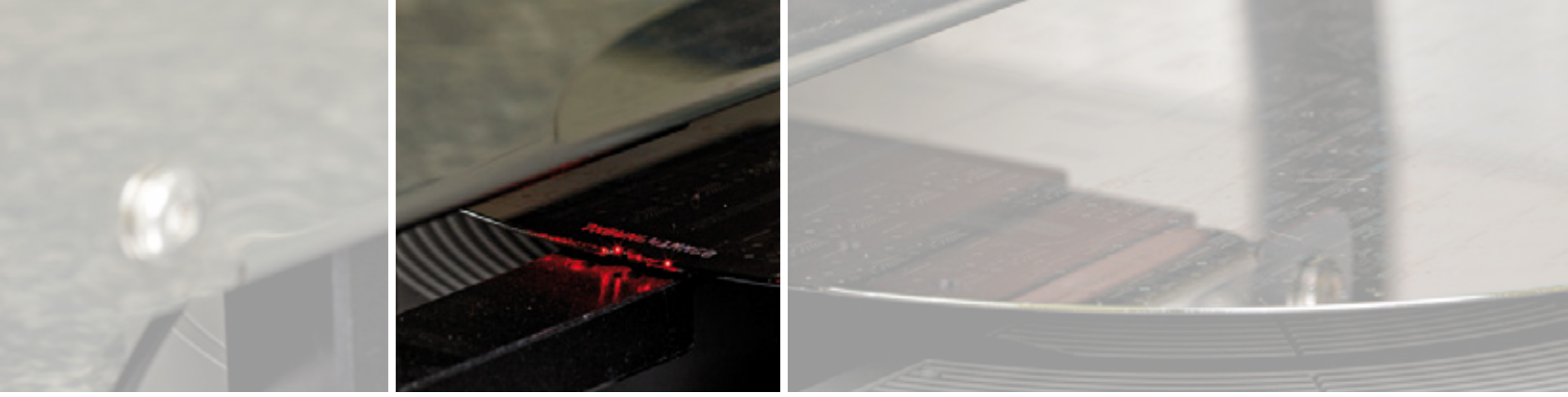
MEASUREMENT MODES

STANDARD			
Front-side to front-side measurement		**Target A & Target B** - Imaged via top-side microscope - Reflected visible wavelength illumination	
Back-side to back-side measurement		**Target A & Target B** - Imaged via bottom-side microscope - Reflected visible wavelength illumination	
Front-side to back-side measurement		**Target A** - Imaged via top-side microscope - Reflected visible wavelength illumination	**Target B** - Imaged via bottom-side microscope - Reflected visible wavelength illumination
INFRARED (OPTIONAL)			
Front-side to interface measurement		**Target A** - Imaged via top-side microscope - Reflected visible wavelength illumination	**Target B** - Imaged via bottom-side microscope - Infrared transmission illumination
Back-side to interface measurement		**Target A** - Imaged via bottom-side microscope - Reflected visible wavelength illumination	**Target B** - Imaged via bottom-side microscope - Infrared transmission illumination
Interface to interface measurement		**Target A & Target B** - Imaged via bottom-side microscope - Infrared transmission illumination	

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.



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TECHNICAL DATA

WAFER / SUBSTRATE

Wafer / Substrate size	Wafers up to 200 mm Pieces and other substrates upon request
Wafer / Substrate thickness	≤ 10 mm
Type of handling system	DSM8 – Manual DSM200 – Automatic with robotic handler

MEASUREMENT

	Visible Light	Infra Red
Accuracy (3 σ)	≤ 0.2 µm	≤ 0.3 µm
Repeatability (3 σ)	≤ 0.15 µm	≤ 0.2 µm
Throughput	≤ 42 WPH	≤ 35 WPH
TIS compensation	0° and 180° result comparison	

OPTICS

Microscopes	Top- and bottom-side microscopes with high and low magnification options
Focus Drive	Motorized movement with available autofocus
Objectives	5 x, 10 x
Depth of Focus	5 x objective – 8 µm - 29 µm 10 x objective – 6 µm - 11 µm
Cameras	1/2" IT CCD, 640 x 480 pixel

OPTIONS

Edge grip substrate handling
SECS II / GEM for DSM200 Gen2
Wafer ID reader
Ergo loading cassette station for DSM200 Gen2

UTILITIES

CDA	> 0.6 MPa. Consumption 1.0 m³/h
Vacuum	≤ 0.02 MPa
Electrical Power	200 - 240 VAC, 50 / 60 Hz, 1 kW

PHYSICAL DIMENSIONS

Width x Depth x Height	DSM8 – 728 x 1220 x 1732 mm DSM200 – 1430 x 1220 x 1732 mm
Weight	DSM8 – 560 kg DSM200 – 760 kg

Visit **www.suss.com/locations**
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