

# SigmaClean



## Debris-Free 100 - 200 mm Wafer Marking

### THE INDUSTRY-LEADING SOFTMARK SOLUTION

SigmaClean's Class 1 cleanroom compatibility and ultra-stable diode-pumped laser has helped to make it the industry-leading solution for cost-efficient, highly-readable soft marking of 100 mm to 200 mm wafers for identification and traceability.

### PATENTED SUPERSOFTMARK® TECHNOLOGY

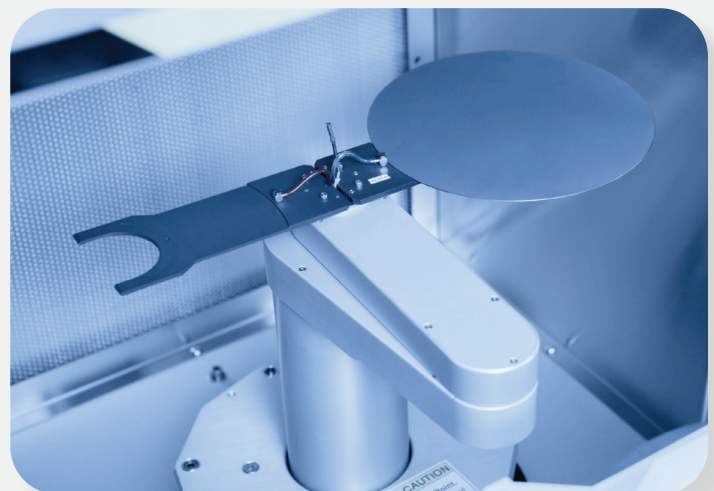
SigmaClean's proprietary SuperSoftMark® technology, along with its patented diode-pumped laser, enables it to deliver debris-free soft marking, and allows the system to be installed in customer cleanrooms for high-volume production.

### HIGH PERFORMANCE WITH GREATER CONTROL

SigmaClean combines a high-performance laser system with best-in-class system-level closed-loop control and automated system data logging. All laser performance data is accurately logged to SPC levels of mark quality.

### SEMI-COMPLIANT WAFER MARKING

TUI's WaferMark® systems are fully compliant with SEMI standards for wafer marking: T7, M12 and M13. SigmaClean can place multiple mark groups at any orientation on the wafer front surface, within a 25 mm band around the wafer's circumference.



# SYSTEM SPECIFICATIONS

## MARKING PERFORMANCE

### Marking Modes

Dot Matrix, Softmark  
(straight line or arc marking)

### SuperSoftMark® Process

0.02 particles/cm, 0.17 particle size  
measured over 5 mm area

### Dot Diameter

50-90  $\mu\text{m}$  +/- 10%

### Dot Roundness

<1.1 major to minor axis ratio

### Dot Depth

2.4  $\mu\text{m}$  - 5  $\mu\text{m}$  +/- 0.4  $\mu\text{m}$

### Throughput

240 wph, single pulse, 5x9 dot matrix,  
12 characters

### Material

Polished, non-coated, pure Si wafers

## WAFER HANDLING

### Wafer Size

100-200 mm

### Alignment

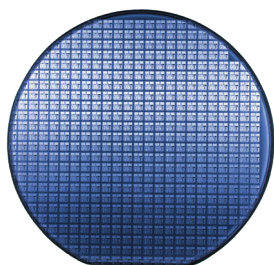
Optical high-resolution wafer aligner

### Wafer Transport

Pick & place robot arm with Dual End Effector

### Cassette Ports

Three 100-200 mm Cassette ports



## UTILITY REQUIREMENTS

### Electrical

200-240 VAC, single phase, 50/60 Hz, 23 FLA

### Process Vacuum

20 Hg to 25 Hg. 1/4 in diameter press-lock  
connection

### Mark Point Exhaust

20 CFM (560 l/min) flow rate max  
1.25 in (32 mm) diameter port

### Ambient Conditions

Static Charge: 197 V/cm (550 V/in) max

### Air-Cooled System

Temp: 12.8 - 27 °C (55-80 °F)

### Dimensions

66 in x 57.5 in x 38.5 in [HxWxD]  
(1675 mm x 1461 mm x 978 mm)

### Weight

1425 lbs (646 kg)

## PC CONFIGURATION

- Intel-Core CPU
- Windows 10, 32/64 Bit
- DDR3 ECC Memory
- PCI; PCIe x1; PCIe x16 slots
- 10/100/1000 T LAN Ports
- USB 3.0; USB 2.0 Ports
- RS232 ports - Includes Adapter Plates
- Intel 2.5 in Solid State Drives
- 2-Drawer drive carrier for 2.5 in drives
- DVD/DL Drive

## CONTROL SYSTEM

- Keyboard and flat panel display
- Menu-driven "fill in the blank" software
- Multiple job file storage capability
- Fault and error logging capabilities
- System diagnostic indicators displayed on front panel and electronic console
- SECS II/GEM interface
- Four color programmable signal tower

## MARKING FONTS (STANDARD)

- 9x17 Single-Density Dot Matrix
- 10x18 Double Density Dot Matrix
- 5x9 SEMI Single Density Dot Matrix
- T1 SEMI Specs BC-412 Bar Code
- T7 2D Data Matrix
- Checksum Function (user selectable)
- Custom Fonts Available

### Mark Char

80 char/group max 50x50 mm

### Mark Field

50x50 mm after wafer aligned

### Mark Location

Within a 25 mm band around wafer  
circumference

### Mark Repeatability

+/- 75  $\mu\text{m}$  in X & Y relative to primary fiducial

### Character Formation

SEMI M12/M13

## LASER/OPTICS

### Type

Acousto-optic Q-switched,  
TEM<sub>00</sub>Nd: YLF diode-pumped laser

### Wavelength

1053 nm

### Pulse Stability

<0.5% at 1 khz

### Optics

Flat field focusing lens

### Spot Size

50  $\mu\text{m}$ , 60  $\mu\text{m}$  70  $\mu\text{m}$  or 90  $\mu\text{m}$

### Depth

2.4  $\mu\text{m}$  to 5.0  $\mu\text{m}$

## CERTIFICATION

CE Mark

SEMI S2, S8, S14

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