

SigmaDSC™



Efficient hard marking that survives the harshest processing of 100 mm - 300 mm wafers

THE INDUSTRY-LEADING HARDMARK SOLUTION

SigmaDSC is the industry-leading solution for SEMI-standard compliant hard marking on semiconductor wafers. TUI's control software enables the user to manage much of the system's functionality. Programmable. Depth Control allows for adjusting marking depth, up to 100 μm .

DUAL-SPOT OPTICS™ FOR TWO SOFTWARE-SELECTED SPOT SIZES

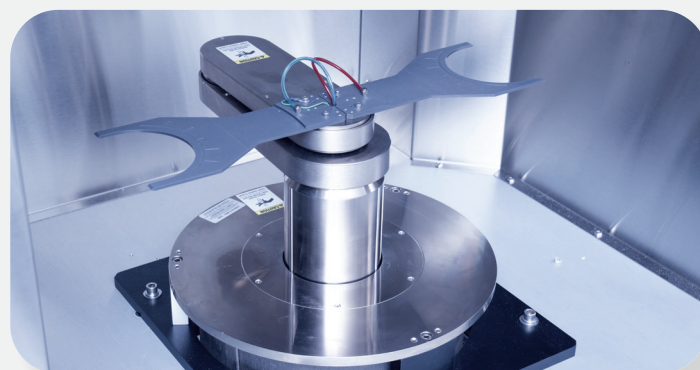
SigmaDSC's Dual-Spot Optics™ technology allows for the delivery of two separate software-controlled spot sizes on the same system. Depending on the laser deployed in the system, users can select from a range of calibrated spot sizes, from 50 μm to 110 μm .

HIGH PERFORMANCE WITH GREATER CONTROL

SigmaDSC 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. SigmaDSC can place multiple mark groups at any orientation on the wafer surface, within a 25 mm band around the wafer's circumference.



SYSTEM SPECIFICATIONS

MARKING PERFORMANCE

Marking Modes

Dot Matrix, Hard Mark
(straight line or arc marking)

Dot Diameter

50 -110 μm +/- 10%

Dot Roundness

<1.1 major to minor axis ratio

Dot Depth

5-110 μm +/- 10%

Throughput

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

Material

Unpolished and Polished, Si wafers

WAFER HANDLING

Wafer Size

100-300 mm

Alignment

Optical high-resolution wafer aligner

Wafer Transport

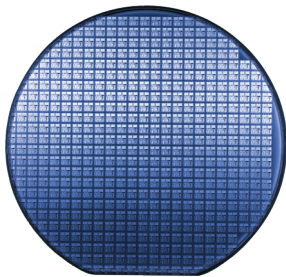
Pick & place robot arm with Dual End Effector

*Optional Pick & Place with Single or Dual
Flipper Robot

Cassette Ports

Three 100-200 mm Cassette Port

*Optional Two 300 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

Mark Field

50x50 mm after wafer aligned

Mark Location

Within a 25 mm band around wafer
circumference

Mark Repeatability

+/- 75 μm in X & Y relative to primary fiducial

Character Formation

SEMI M12/M13

LASER/OPTICS

Type

Acousto-optic Q-switched,
TEM₀₀Nd: YLF diode-pumped laser

Wavelength

1053 nm

Pulse Stability

<0.5% at 1 khz

Optics

Flat field focusing lens

Spot Size

50-110 μm

Depth

5-110 μm +/-10%

CERTIFICATION

CE Mark

SEMI S2, S8, S14

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