



## Debris-Free 100 - 200mm Wafer Marking

### The Industry-Leading SoftMark Solution

SigmaClean's Class 1 cleanroom compatibility and ultra-stable patented 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 super softmark 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

ESI's WaferMark system 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 surface, within a 25mm band around the wafer's circumference.

# System Specifications

## Marking Performance

Marking Modes	Dot Matrix Hardmark (straight line or arc marking)
SuperSoftMark® Process	0.02 particles/cm, 0.17 particle size measured over 5 mm area
Dot Diameter	50 µm +/- 10%
Dot Roundness	<1.1 major to minor axis ratio
Dot Depth	2.6 µm + 0.4 µm
Throughput	125 wph single pulse, 5x8 dot matrix, 12 characters
Throughput Edge	0 wph
Handling (option)	
Material	Polished, non-coating, pure Si wafers

## Marking Fonts (Standard)

	9 x17 Single Density Dot Matrix
	10x18 Double Density Dot Matrix
	5x9 SEMI-OCR
	T1-93 SEMI Specs BC-412 Bar Code
	T7 2D Data Matrix
	Checksum Function (user selectable)
Mark Char	80 char/ group max
Mark Field	50x50mm after wafer aligned
Mark Location	Within a 25 mm band around wafer circumference
Mark Repeatability	+/- 0.125 µm in X & Y relative to primary fiducial
Character Formation	Meets SEMI M12-92

## Laser Optics

Type	Acousto-optic Q-switched, TEM <sub>00</sub> ND: YLF diode-pumped laser
Wavelength	1053 nm
Pulse to Pulse Stability	<0.5% at 1 kHz
Optics	Flat field focusing lens
Spot Size	50, 60 or 70 µm
Depth	2.5 to 5.0 µm

## Wafer Handling

Wafer Size	100 - 200mm
Alignment	Optical high-resolution wafer aligner
Water Transport	Pick and place robot arm with single end effector
I/O Ports	Two fixed FOUP carrier load ports

## Utility Requirements

Electrical	200-240 VAC, single phase, 50/60Hz, 23FLA
Process Vacuum	20 Hg to 25 Hg diameter press-lock connection
Mark Point Exhaust	20 CFM (560 l/min) flow rate max 1.25 inch (32 mm) diameter port
Ambient Conditions	Static Charge: 197 V/cm (550 V/in) max
Air Cooled System	Temp: 12.8 - 27° (55-80 °F)
Dimensions	78" x 64.6" x 47.4" [HxWxD] (1981.2mm x 1641mm x 1204 mm)
Weight	EFEM: 1480 lb (671 kg) Mark Enclosure: 1145 lbs (519 kg)

## Workstation

Enclosure	Stainless steel, ISO Class 5 clean room compatible with ISO Class 2 mini-environment
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## PC Configuration

	Intel Xeon-E3-1275 V3 3.5 KHz 4-Core CPU
	Windows 7 Pro SP1, 32 Bit
	4GB DDR3 1333MHz ECC Memory (2x2GB)
	(3) PCI; (1) PCIe x1; (2) PCIe x16 slots
	(4) 10/100/1000T LAN Ports
	(4) USB 3.0; (9) USB 2.0 Ports
	(2) RS232 ports - Includes Adapter Plates
	(2) Intel 20GB 2.5" Solid State Drives
	2-Drawer drive carrier for 2.5" drives
	LG 24X 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
	Four-color programmable signal tower

## Certification

	CE Mark
	SEMI S2, S8, S14



Ask an Expert! For facilities guidelines requirements or more information, please contact your local ESI office or visit [www.esi.com](http://www.esi.com).

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