



## AW-303R

### Introduction

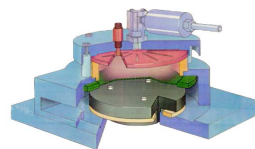
The AW-303R is an electromechanical production system used to etch materials such as nitride, oxide, polysilicon, etc. from the surface of silicon or other substrates. Each wafer is processed individually by means of a chemical reaction induced by a gas plasma. The AW-303R is an automated single wafer tool designed as a flexible 13.56MHz RF downstream plasma etch system for high-volume wafer fabrication. The AW-303R is in direct response to manufacturer's concerns for wafer uniformity, uptime, reliability and production-proven technology.

### AW-303R Key Features

- ⊕ Production-proven plasma Asher/Descum system.
- ⊕ Integrated solid robotic wafer handling, Single wafer process.
- ⊕ High selectivity to PR (> 10: 1 Oxi.de:PR)
- ⊕ Frontside and backside isotropic removal.
- ⊕ Consistent wafer-to-wafer process cycle repeatability.
- ⊕ Temperature control from 20 to 120°C.
- ⊕ 50mm-150mm wafer capability. Up to 6.25" substrate.
- ⊕ Up to 4 wafer size capability without hardware change.
- ⊕ Fixed cassette station and wafer aligner/cooling station.
- ⊕ Can handle 50um thickness wafer.
- ⊕ PC controller with Advanced Allwin21 Software.
- ⊕ Endpoint detection (EOP) with Allwin21 SLOPE technology (Optional).
- ⊕ Up to 4 gas lines with MFC.
- ⊕ Air-Cooled 600W MKS 13.56 MHz RF Generator (300W Option).
- ⊕ Pressure control with Throttle Valve.
- ⊕ 15-inch Touch screen monitor GUI.
- ⊕ EMO, Interlocks, and Watchdog function.
- ⊕ GEM/SECS II (optional).
- ⊕ Small Footprint: 27"W x 40"D x 59"H (280LBs)
- ⊕ Made in U.S.A.



Integrated Robust Solid Robot



Production-proven Reactor

### AW-303R Applications

- ▶ Isotropic Oxide Etch for Contacts and Vias
- ▶ Silicon ARC Removal
- ▶ Passivation Etch Oxynitride
- ▶ Passivation Etch Nitride
- ▶ Backside Poly Etch
- ▶ Backside Nitride Etch
- ▶ LPCVD Nitride Etch (LOCOS)
- ▶ ASM Alignment Mark Etch
- ▶ SiChrome Etch

### AW-303R Software Key Features

- Real time graphics display, process data acquisition, and analysis.
- Closed-loop process parameters control.
- Precise parameters profiles tailored to suit specific process requirements.
- Programmable comprehensive calibration of all subsystems from within the software. This allows faster, easier calibration, leading to enhanced process results.
- Recipe creation to ensure process repeatability. It features a recipe editor to create and edit recipes to fully automate the processing of wafers inside the process chamber.
- Validation of the recipe so improper control sequences will be revealed.
- Storage of multiple recipes, process data, and calibration files so that process & calibration results can be maintained or compared over time.
- Passwords provide security for the system, recipe editing, diagnostics, calibration, and setup functions.
- Simple and easy to use menu screen which allow a process cycle to be easily defined and executed.
- Troubleshooting features which allows engineers and service personnel to activate individual subassemblies and functions. More I/O and AD/DA "exposure".
- DB-25F parallel (printer) port. The computer interfaces to the Allwin21 system with only one cable: the control interface cable.
- The control board inside the machine that translates the computer commands to control the machine has a watchdog timer. If this board loses communication with the control software, it will shut down all processes and halt the system until communication is restored.
- GEM/SECS II function (Optional).
- Advanced Allwin21 End of Process (EOP) function (Optional)

### AW-303R Specifications\*

- ❖ Wafer Size: Up to 6.25 inch.
- ❖ Temperature: 20-120°C (±2°C)
- ❖ Gas Lines: Up to four gas lines with MFCs.
- ❖ >2000 A/min. Thermo Oxide, >16000A/min.LPCVD Nitride
- ❖ Uniformity: <±3~5%
- ❖ Particulate: <0.15 /cm<sup>2</sup> (0.3um or greater)
- ❖ Damage: CV:<0.1V from control; Mobile Ion:<1-2 E10 ; Vt :0% total shift on 98% of points tested no shift >5%
- ❖ Selectivity: >10:1(Oxide:PR, SiN:Oxide)
- ❖ MTBF/MTTA/MTTR: 450 Hours/100 Hours/3.5 Hours or Better.
- ❖ 95% uptime

\*Contact Allwin21 sales for other applications and specifications

### AW-303R Configuration

- Main Frame with Circuit Breakers, Solenoid Valves
- Pentium Class PC with AW Software
- Keyboard, Mouse, USB SW backup, and Cables
- Chuck /w Heat, Pump Ring ,Lift Pins
  - ① 2-4 inch; ② 2-6 inch; ③ 4-6 inch; ④ 6.125 inch; ⑤ 6.25 inch
- Center Aligner and Cassette Station
  - ① Two Dimensions ② Four Dimensions
- Non-Anodized Reactor with Door
- Chamber Base plate with water sensor
- Reactor Ceramic Ring
- Metal baffles
- Upper Electrodes
- Metal showerhead & Diffusion Disk
- Main Control and Distribution PCBs
- 3-axis Integrated Robust Solid Robot RF
- Matching Network with PCBs
- 13.56MHz RF Generator
  - ① 300W ② 600W
- MFC /w In-line Filter and Solenoid Isolation Valve
  - ① One MFC; ② Two MFCs; ③ Three MFCs; ④ Four MFCs
- AC/DC Box and Temperature Controller
- MKS Baratron with Isolation Valve
- Lamp Tower Alarm w/ Buzzer
- Throttle Valve
- Main Vacuum Valve
- Front EMO, Interlocks
- 15-inch Touch Screen GUI



Main Menu Screen

#### Options:

- ◆ End-of-Process (EOP)
- ◆ GEM/SECS II (Software)
- ◆ Vacuum Pump
- ◆ Chiller for Chamber Base Plate

### AW-303R Facilities

- ▶ Plumbed Process Gases
- ▶ Cooling water: 1GPM house circulating supply @ <23 ± 2°C
- ▶ Facility Exhaust: 100 CFM @ 1" static pressure
- ▶ Vacuum supply for Robot: 11.8"Hg(-5.8psi) / 0.1CFM airflow
- ▶ Power: 190-240VAC, single phase, 30A, 50/60Hz (NEMA L-6-30P plug supplied)

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