

SAMCO PC300 – PLASMA CLEANER



Samco PC300

1. Introduction

Samco PC300 plasma cleaner has a parallel-plate configuration that can be used in both plasma etching (PE) mode as well as reactive ion etching (RIE) mode for isotropic and anisotropic etching respectively. It can be used for stripping photoresist, descumming, ashing, and surface cleaning or modification for substrate and wire bonding applications. Please contact staff for approved materials and processes.

2. Features

1. Touch Screen Interface
2. RF power 300W max, 13.56 MHz
3. Maximum substrate size: 12" x 9"
4. Minimum substrate size: none
5. Reactive Ion Etching
6. Plasma Etching
7. O₂ Plasma

3. Safety

Follow general safety guidelines in the lab and the specific safety rules as per follows:

1. **UV radiation Hazard:** This equipment generates UV radiation. Avoid looking into plasma for extended period.
2. **Electric Hazard:** Fatal electrical shock and/or severe burns can be caused by the supply voltage of up to 208VAC 15A for the system. **Do not remove any covers or tamper the system.**
3. Pay attention to safety symbols on the equipment.
4. Press EMO button if there is an immediate danger to personnel or the equipment and inform the staff.
5. All power sources, pumps, and valves are interlocked to prevent errors during operation.



6. Long runs may heat up the shelf over 150°C. Wear heat protective gloves if necessary.

4. Available processes

Various recipes for different conditions are available. See the appendix for default recipes.

5. Precautions

Make sure the back side of your substrate is clean.

6. Operating Procedure

1. Start your reservation in NUcore.
2. Press the green ON button to start up the system (Figure 1).
3. Wait until the system boots up, then press START button on the touch screen (Figure 2).
4. Main Menu will be displayed (Figure 3)
5. To select a recipe; Press Recipe and type the desired recipe number and confirm with enter. (Figure 4)
6. You may check the recipe parameters by pressing “Config Recipe” button.
7. Press and hold the “Vent” button for 2 seconds to vent the chamber to atmosphere.
8. Open the door and place your sample(s) in the chamber as flowing (Figure 5)
 - a. **RIE mode:** On the shelf.
 - b. **PE Mode:** At the bottom of the chamber under the shelf.
9. Close the door.
10. Press and hold the “Start” button for 2 seconds to start the process.
11. When process finishes press the “BZ Stop” to stop the beeping.
12. Open the door and remove your samples.
13. Close the door
14. When you are finished, press and hold the “Vac” button for 2 seconds to start pumping down the chamber.
15. Wait until the pressure is below 10 Pa.
16. Press and hold the “Vac” button for 2 seconds.
17. Press the red OFF button to shut down the system.
18. End your reservation in NUcore.



Figure 1: Emergency stop (EMO) and main ON/OFF switches

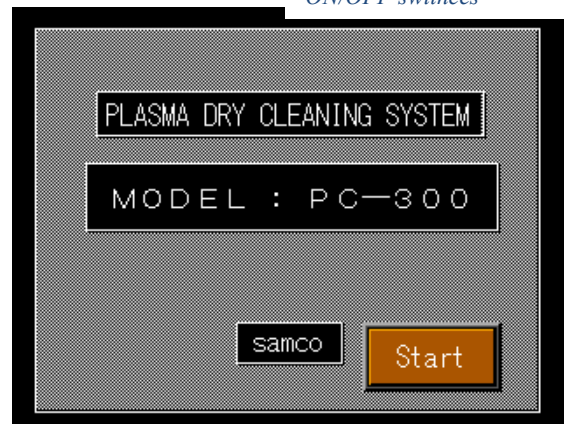


Figure 2: Start screen

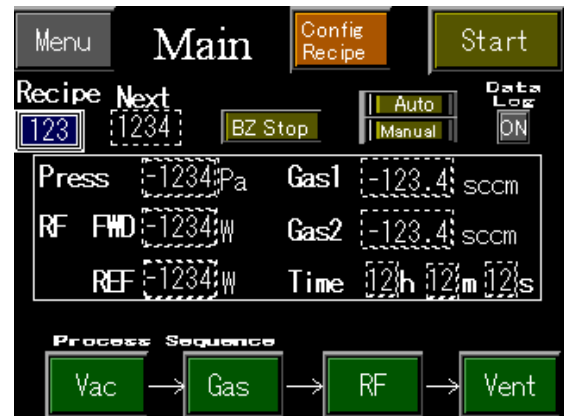


Figure 3: Main Menu

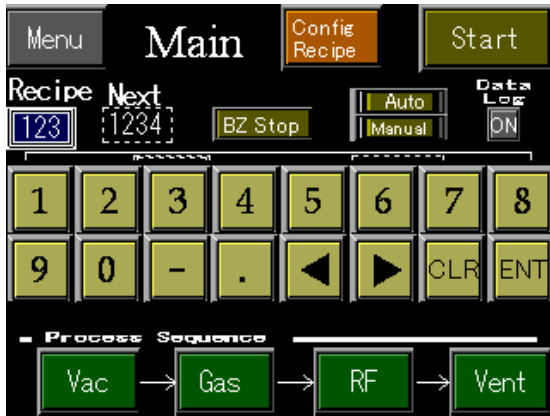


Figure 4: Recipe selection

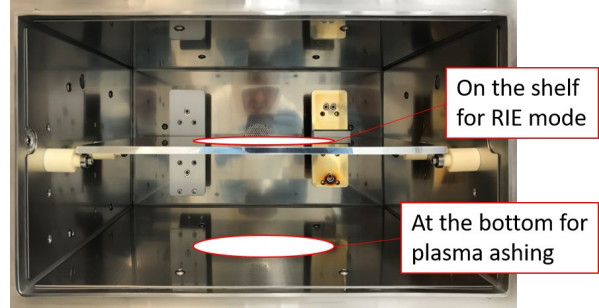


Figure 5: inside of the chamber and sample placement

7. Recipe Editing

1. Press the "Menu" Button
2. Press the "Recipe" Button (Figure 7)
3. Edit the recipe according to your process needs. Note that only Gas 1 is available. (Figure 6)

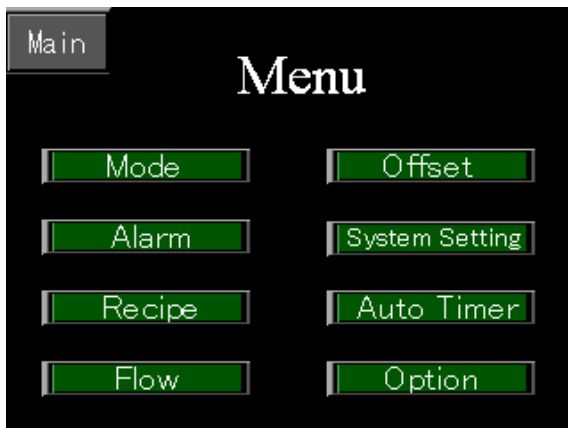


Figure 7: Menu



Figure 6: Recipe editing

Appendix A – Default Recipes

Recipe Number	O ₂ flow (sccm)	Back Pressure (Pa)	Sample position	RF Power (W)	Usage	Rate (nm/min)
1	12	10	shelf	250	PR stripping	>150
2	50	20	bottom	100	Descum	
3	20	20	Shelf	100	Surface Treatment	

Appendix B – Application Example

Surface Treatment with recipe #3

Contact angle of water droplets on Si is measured around 74° before and 3° after the surface treatment.

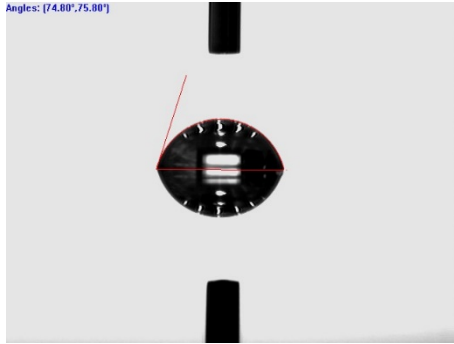


Figure 9: Before surface treatment.

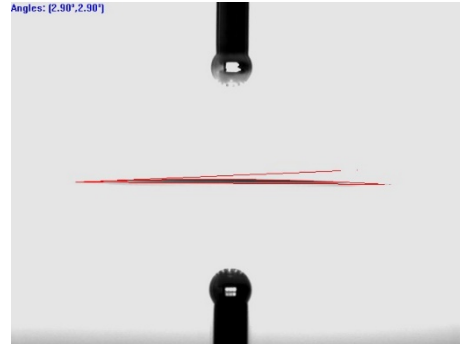


Figure 8: After surface treatment