



MARCH ExoSPHERE

Superior Plasma Surface Treatment for Panel-Level Packaging

The MARCH ExoSPHERE provides unparalleled treatment uniformity and process consistency. Designed for panel-level packaging (PLP), it enhances surface activation, cleaning, and adhesion for void-free underfill and other critical applications. The three-axis symmetrical chamber ensures all positions of the product are treated uniformly, while tight controls over all process parameters ensure repeatable results from panel to panel.

High-Throughput Processing Capability

The ExoSPHERE is a highly configurable, high-throughput plasma system that accommodates a diverse array of product form factors, including panels, wafers, boats, carriers, JEDEC/Auer® boats, and strips. Depending on the throughput and product specifications, the system can be configured for magazine-to-magazine processing of single or multiple strips and lead frames, wafer processing, or as a standalone unit for island-based production environments.

SMART Tune™ Management System

The SMART Tune management system offers closed-loop plasma control that optimizes the RF system and reduces tuning time. It automatically resets to a plasma-ready state, adjusting for variations in vacuum pressure, temperature, and different lot sizes. The system achieves maximum power to the chamber within seconds, using a proprietary algorithm that continuously measures both forward and reflective power inside the chamber.

Key Applications and Benefits

- Ultimate flexibility for direct, downstream, and ion-free (patented) plasma, allowing treatment without exposure to ion activity and UV energy.
- Supports large substrates up to 650W x 650D x 100H mm with consistent uniformity.
- An adaptable monitor mounting location provides flexibility for operations and enhances user convenience.
- Easily integrates with wire bond, die attach, dispensing, molding, and marking equipment.
- Slim design requires minimal floor space.
- Industry-leading throughput capacity with short cycle times.
- Compact chamber volume and proprietary process control ensure exceptionally short cycle times.

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Specifications

Enclosure Dimensions	W x D x H – Footprint	908W x 1565D x 1767H mm (2185H mm with light tower) 35.8W x 61.6D x 69.5H in. (86.0H in. with light tower)
	Net Weight:	820 kg (1800 lbs)
	Equipment Clearance	Front, Left, Right – 305 mm (12 in.) Back – 381 mm (15 in.)
Chamber	Maximum Volume	21.5 liters (1310 in ³ based on 2H in.)
Electrodes	Electrode Configurations	Power-Ground
	Working Area	650W x 650D mm (25.6W x 25.6D in.)
RF Power	Standard Wattage	3000 W
	Frequency	13.56 MHz
Gas Control	Available Flow Volumes	100, 250, and 500 sccm
	Maximum Number of MFCs	3
Control and Interface	Software Control	EPC with PC-based touchscreen interface
	Remote Interface	SMEMA, SECS/GEM
Vacuum Pump	Standard Dry Pump	22 cfm
	Optional Purged Dry Pump	22 cfm
	N2 Purged Pump Flow	2 slm
Facilities	Power Supply	220 VAC, 20A, 50/60 Hz, 1-Phase, 12 AWG, 3-Wire
	Process Gas Fitting Size & Type	6.35 mm (0.25 in.) OD Swagelok Tube
	Process Gas Purity	Lab or Electronic Grade
	Process Gas Pressure	0.69 bar (10 psig) min. to 1.03 bar (15 psig) max., regulated
	Purge Gas Fitting Size & Type	6.35 mm (0.25 in.) OD Swagelok Tube
	Purge Gas Purity	Lab or Electronic Grade N2/CDA
	Purge Gas Pressure	2 bar (30 psig) min. to 6.9 bar (100 psig) max., regulated
	Pneumatic Valves Fitting Size & Type	6.35 mm (0.25 in.) OD Swagelok Tube
	Pneumatic Gas Purity	CDA, Oil Free, Dewpoint ≤7°C (45°F), Particulate Size <5 μm
	Pneumatic Gas Pressure	5.5 bar (80 psig) min. to 6.9 bar (100 psig) max., regulated
	Exhaust	25.4 mm (1 in.) OD Pipe Flange
Compliance	SEMI	S2/S8 (EH&S/Ergonomics)
	International	CE Marked
Ancillary Equipment (Supplied by customer)	Gas Generators	Nitrogen
	Facilities	Chiller, Scrubber

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