

PARAMOUNT[®] MF RF POWER-DELIVERY SYSTEMS

DIGITAL CONTROL | 400 KHZ | 2 TO 8 KW



Expand process innovation with precise, fully digital RF control and comprehensive performance features.

Paramount[®] MF RF Power-Delivery Systems

As manufacturing technologies evolve, the Paramount[®] MF platform delivers precise RF control to enable rapid plasma changes, while its flexible digital architecture, wide output coverage, and comprehensive feature set facilitate process customization.

BENEFITS

- Plasma stability and process repeatability
- Precise RF control
- Fast response to plasma changes
- Flexibility and adaptibility to meet specific application needs

SEMICONDUCTOR APPLICATIONS

- PVD
- PECVD

FEATURES

- 2 to 8 kW, 400 kHz models
- Full digital control
- Pulse synchronization
- Frequency tuning
- Real-time power and impedance measurement
- Tightly regulated output power
- Set points as low as 5 W for 2 kW and 3 kW models
- Set points as low as 100 W for 5 kW and 8 kW models
- Arc management





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Digital Architecture

An inherently adaptable design enables precise process measurement and control, as well as easy integration of advanced functions — eliminating the complexity and lead times typically associated with hardware changes.

Frequency Tuning

During short process steps, fast tuning and repeatable power delivery maintain process stability and repeatability. A sweep frequency algorithm minimizes load mismatch as detected by the generator's output sensor by locking the generator at a tune point and tracking (re-tune frequency) to follow changes in load conditions.

Wide Power Coverage

A wide set point range, from 2000 to 8000 W, accommodates changing RF requirements, making process development more efficient by eliminating the need for new-product integrations and learning curves.

Arc Management

With 100% user-selectable arc-management parameters and a fast arc response, the Paramount MF platform helps reduce particle contamination, feature distortion, and equipment damage.



Paramount[®] Power and Impedance Measurement Rivals the Accuracy of a Network Analyzer.

Advanced Power and Impendance Measurement

Real-time measurement of plasma characteristics and extreme sensitivity to plasma changes produce high-accuracy, repeatable power performance.



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Paramount MF Power Supplies		
General Specifications		
RF Output Power	5 to 2000 W	
	5 to 3000 W	
	100 to 5000 W	
	100 to 8000 W	
Regulation Modes	Forward and load power	
Minimum Step Resolution	1.0 W	
Power Accuracy	$\pm1\%$ of set point or 2 W, whichever is greater, when operating at 400 kHz into a 50 $\Omega,$ non-reactive load for 100 to 5000 W	$\pm 1.5\%$ of set point or 3 W, whichever is greater, over entire frequency range when operated into a 50 $\Omega,$ non-reactive load for 100 to 5000 W
Frequency	330 to 460 kHz	
Input Power	208 VAC ±10% (187 to 228 VAC); 60 Hz	
Dimensions	7.0" H x 17.1" W x 19.7"D 17.8 cm x 43.5 cm x 50.1 cm	
Weight	35.4 kg (78 lb)	
Cooling Method	Combination air and water	
Efficiency	2 kW	> 78% into 50 Ω
	3 kW	> 81% into 50 Ω
	5 kW	> 85% into 50 Ω
	8 kW	> 87% into 50 Ω
Feature Set		
Continuous Wave (CW)	Available	
Single-Level Pulsing (SLP)	Frequency range: 10 Hz to 2 kHz	
Frequency Tuning	330 to 460 kHz for all generators	
Tune Time	< 100 ms, depending on user settings	
Communication Protocols	RS-232, EtherCAT®, Profibus	
Arc Management System	Available with arc synchronization	





ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than four decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

Advanced Energy

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