



Plasma &

Reactive Gas Solutions

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High Power Microwave Plasma System

DELIVERING THE HIGHEST CONCENTRATION OF RADICALS

The High Power Microwave Plasma System features the High Power Microwave Plasma Source, generator (with isolator) and auto-tuning system comprised of the Precision Power Detector and SmartMatch® unit. This comprehensive system delivers a high concentration of radicals with low electron temperatures for the highest dissociation and lowest recombination rates. With the ability to ignite in various process gases over a wide operating range within seconds, the High Power Microwave Plasma System is compatible with current and advanced applications such as photoresist removal post-HDIIS implant, advanced surface cleaning and conditioning, and advanced deposition applications.

Features & Benefits

- Advanced closed loop power control with < 1% output accuracy variation for optimal wafer to wafer repeatability
- Instant plasma ignition in process gas for faster process times
- Autotune system within <1.5 seconds for more productive and reliable systems
- Delivers radicals into a wider pressure range and at higher flow for optimal productivity and faster process times
- High power to deliver a higher radical output in hydrogen-based plasma to allow for faster process times in HDIIS post-implant application and surface preparation over High K
- Improved resonant cavity design and thermal management provides greater uniformity and longer life between plasma tube maintenance
- Optimized self diagnostics and protection for superior monitoring
- Enhanced electronics on power and control boards for increased reliability



Specifications and Ordering Information

Overall System

Max Plasma Power Output ^{1,2}	6.0kW
Frequency	2,440 – 2,470 MHz
Ripple	± 3% of output power
Output Accuracy Variation	< 1% closed loop control
Ambient Temperature	Up to 40°C max
Generator to Head Distance	Up to 100 feet max
Microwave Connections	WR284F waveguide with CPR284F flanges
AC Power Input	200 - 208 VAC, 3 phase, 50/60 Hz
Autotune	< 1.5 seconds with < 2% reflected power
Compatible Chemistries ^{1,2}	O ₂ , N ₂ H ₂ , N ₂ , H ₂ O, NH ₃ , H ₂
Applicator Material	Configurable: Quartz, Sapphire
Gas Flow Range ²	1-10 slm
Operating Pressure ²	1-10 Torr
Communication Control	Analog, RS485
Compliance	CE
Configuration	KF40, custom
Cooling	Water: 1 GPM, 20-30°C, 71 PSI max (applicator requires exclusive water cooling supply at 0.50 GPM)

Power Supply Generator

Dimensions (7U rack)	19.00 H x 12.20 W x 20.03 D in. (482.60 x 309.88 x 508.76 mm)
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Power Head - Magnetron Head

Dimensions	9.85 H x 9.85 W x 16.00 D in (250.19 x 250.19 x 406.40 mm)
Cooling	Water: 1 GPM, 20-30°C, 71 PSI max

NOTES:

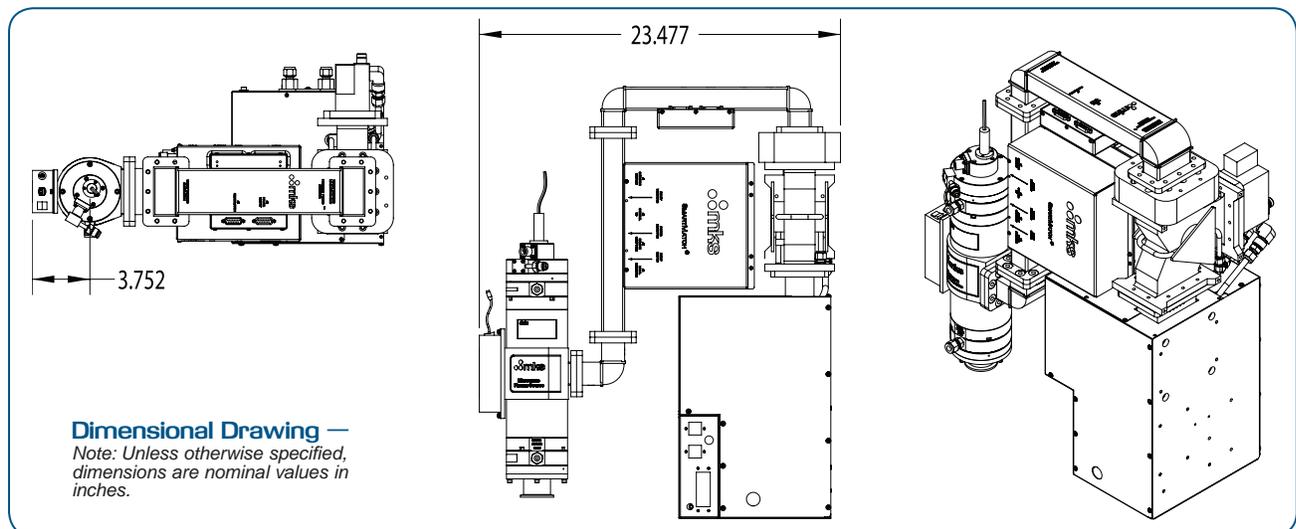
¹ Please contact an MKS Applications Specialist for additional information.

² Lifetime of applicator is dependent on process conditions. Minimizing power will extend tube lifetime.

Ordering Information

Code

High Power Microwave Plasma System, Quartz	HMPX60Q
High Power Microwave Plasma System, Sapphire	HMPX60S



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