



Plasma &

Reactive Gas
Solutions

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R*evolution[®] III

Remote Plasma Source for On-Wafer Processing

INTEGRATED REMOTE PLASMA SOURCE

AX7695 – ON-WAFER PROCESSING, HIGHER FLOW RATES, LOWEST COST “CLEAN” SOURCE OF ATOMIC RADICALS

The R*evolution[®] III integrated remote plasma source, with improved capability over the earlier model, provides the highest performing and cleanest source of reactive gas species required in the processing of semiconductor wafers. The first in a new family of remote plasma sources specifically designed for “on-wafer” applications, the innovative R*evolution III combines MKS’s field-proven, patented Low-Field Toroidal plasma technology with a robust plasma applicator design that produces ultra clean atomic neutrals or radicals.

Atomic radicals are essential in many processes, such as photo-resist removal, wafer pre-clean, and thin film nitridation and oxidation. Radicals are typically created by generating a plasma; however, the associated charged particles are sometimes undesirable. To avoid these adverse effects, the plasma is generated remotely and the radicals are efficiently transported to the process chamber.

The R*evolution III reactive gas generator integrates a quartz vacuum chamber, an RF power supply and all necessary controls into a compact, self-contained unit for easy installation directly on the tool’s process chamber. The result is an extremely clean source of atomic radicals to bring about the desired reaction on the wafer, at a greatly reduced level of complexity. Delivering up to 6 kW of plasma power, the R*evolution III remote plasma source provides high flows of radicals to the process (up to 6 slm), resulting in strip or etch rates that are twice as fast as those of conventional microwave systems. Because of its efficiency and lower cost, the R*evolution III remote plasma source significantly reduces overall investment and tool operating costs. Additionally, its smaller size and design simplicity benefits the user with ease of installation, operation and maintenance.

Features & Benefits

- Integrated, self-contained unit designed for on-chamber installation
- Quartz plasma body for chemical inertness, low-recombination for most atomic species, and high-purity
- High performance, lower cost alternative to microwave or ICP systems for on-wafer applications
- Up to 6 kW of plasma power
 - Accurate power reproducibility
 - Moderate degree of power control
- Fast, reliable plasma ignition
- Based on the patented low-field toroidal plasma technology
 - Proven reliability
- Applications include photoresist removal, gate nitridation, oxidation, wafer pre-clean



Specifications and Ordering Information

Gas Supply

Ignition 100% O₂ or Ar, or 90% O₂/10% N₂ (Contact MKS for ignition with other gases.)
 Process Up to 6.0 slm of 100% O₂, or 90% O₂/10% N₂ (Contact MKS for operation with other gases.)

Operating Pressure

Ignition 0.5 to 2.0 Torr @ 1.0 to 6.0 slm (pressure measured at R*evolution III outlet)
 Process 0.5 to 2.0 Torr @ 1.0 to 6.0 slm

Duty Cycle

100%

Interlocks

Internal thermal switch and internal water flow switch to protect against insufficient cooling

Wetted Materials

6061-T6 Aluminum, Kalrez®, SiO₂, 316L SS, Nickel, Fluorosilicone

Control Interface

Discrete I/O, 9 and 25 pin D connectors, RS-232, DeviceNet™ and Ethernet (MKS TOOLweb®-enabled)

Inputs

Plasma On/Off
 Power Set

Outputs

Ready
 AC line
 Plasma On
 Power Monitor

Utilities

Power 180 to 228 VAC, 50/60 Hz, 30A, 3 phase
 Cooling water 1.75 gpm, < 30°C
 Ambient 40°C max.

Physical

85 lb. (38.6 Kg) 15.7"W x 13.7"W x 12.14"H (399mm x 348mm x 308mm nominal)

Compliance

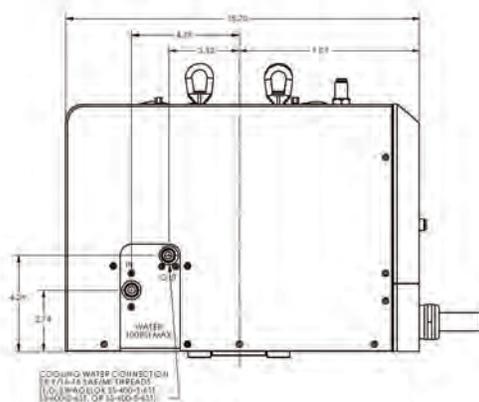
CE, SEMI F47, SEMI S2 (includes S8, S10, S14 assessments), UL 61010-1, CAN/CSA-61010-1

Ordering Code

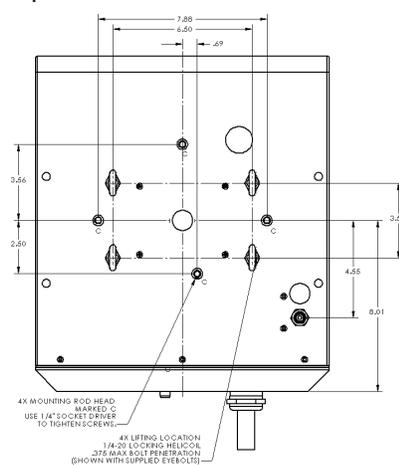
R*evolution® III AX7695 Remote Plasma Source for On-Wafer Processing

Contact your local account representative for pricing, availability, and applications guidance.

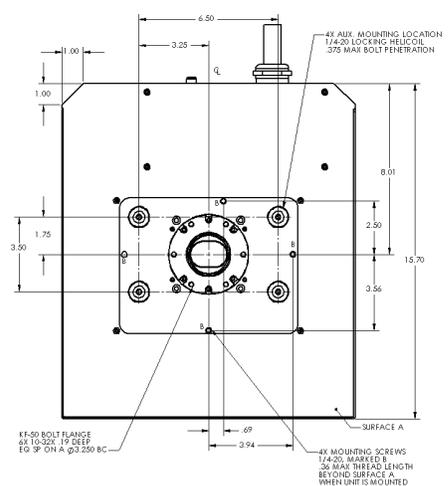
Left View



Top View



Bottom View



Dimensional Drawing —

Note: Unless otherwise specified, dimensions are nominal values in inches.



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