RPS-CH24P1

Remote Plasma Source for High Flow Applications

The RPS-CH24P1, 24 kW remote plasma source is designed for use with larger Atomic Layer Deposition (ALD) and Quad-style Chemical Vapor Deposition (CVD) chambers used in Semiconductor, Flat Panel Display, or Photovoltaic (PV) processes. A split-powered DC/RF design consisting of a rack mounted DC power supply and a 24 kW RF remote toroidal applicator head provides highly efficient destruction of NF_3 molecules for chamber clean applications or high flow mixed gas species applications.

The split power train design allows for greater flexibility in chamber installations and easy access for servicing without breaking chamber vacuum. The RF powertrain remains coupled to the toroidal applicator head for greater plasma stability while the DC rectified power supply provides a SEMI F47 compliant source of power to the applicator head. A new magnetics design combined with new power boost electronics reduces power losses, enhances ignition repeatability, and increases plasma stability, resulting in improved reliability and repeatable performance.

Equipped with EtherCAT® communication protocols, the RPS-CH24P1 streams key parametric data enabling on-tool or in-fab diagnostics. The actively cooled MKS low-field toroidal applicator and proprietary, high purity Al_2O_3 coating deliver extremely long plasma applicator lifetimes to reduce fab operation expenses. When the unit does require routine maintenance, servicing the plasma block applicator can be accomplished without removing the power electronics, reducing service times.

Product Features

- Power Architecture
  - 24 kW RF power output
  - ±1% accuracy to power setting
  - DC boost power regulation
- Process
  - NF_3 species for chamber clean
  - Mixed gas species capable
  - Supports NF_3, O_2, N_2, Ar
- Maintenance
  - Plasma Electrolytic Oxide plasma block coatings for extended block life, lower operating expenses

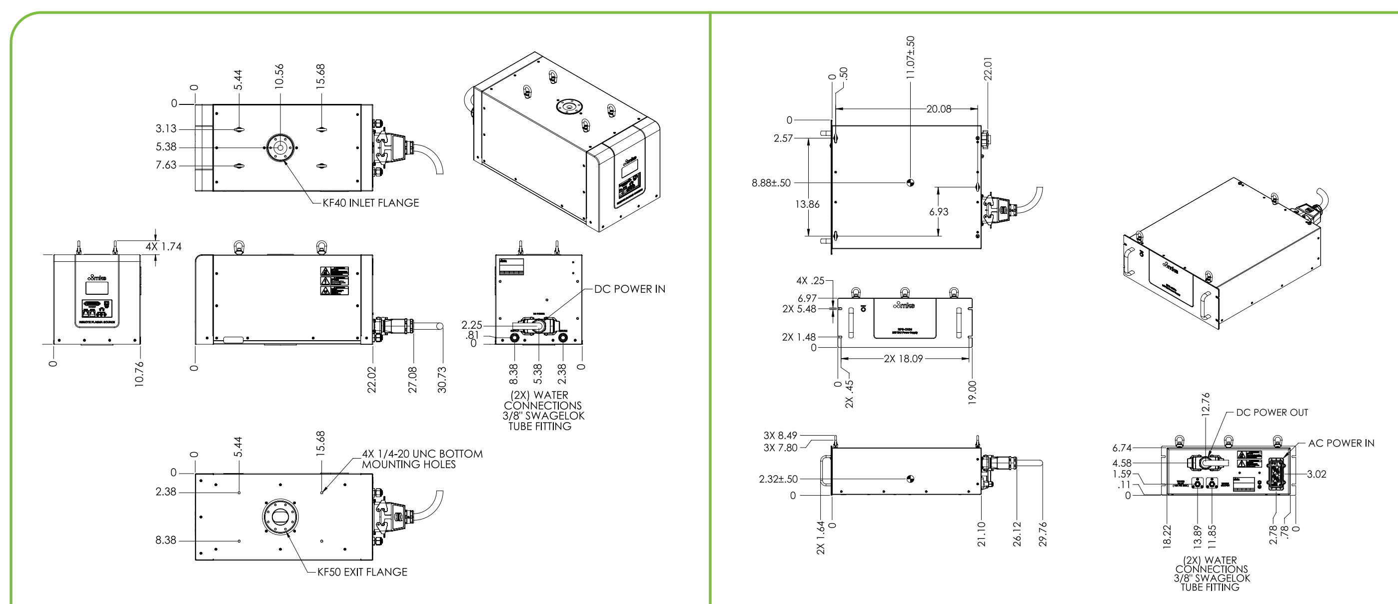
Key Benefits

- Compact split applicator power design provides easy integration to OEM process chambers
- Increased Fluorine radical output shortens clean time cycles
- EtherCAT® communication enables fast, reliable data streaming and unit control
- A new plasma block assembly results in fast turn maintenance

Specifications

Description		
Description	**AC Power** **Frequency/Phase** **RF Power** **RF Frequency** **Power Accuracy** **THD** **Water Flow**	• 208 V • 3 phase 50/60 Hz, 75 Amps RMS max phase • 24 kW • 400 kHz • ±1% to power set point • <15% • Remote Head: 3 gpm (11.36 Lpm); DC Power Supply: 2 gpm (7.57 Lpm)
Operating Window	**NF_3 Flow @ 98% DE** **Mixed Species Space** **Compatible Species** **Ignition Gas**	• 1-25 slm 20T • 30-90 slm • NF_3, O_2, N_2, Ar • Ar
Vacuum Connections	**Gas Inlet** **Gas Outlet**	• KF40 • KF50
Communications/Control	**Analog** **Digital**	• DB25 • EtherCAT
Dimensions/Weight	**Remote Head inches (cm)** **Power Supply inches (cm)**	• 22.02'' x 10.76'' x 11.1'' (55.93 x 27.33 x 28.19); 100 lbs. (45.36 kg) • 21.24'' x 19.00'' x 7.0'' (53.95 x 48.26 x 17.78); 62 lbs. (28.12 kg)
Compliance		SEMI F47

Ordering Code Example: RPS-CH24P1-MKS-02	Code	Configuration
Model		
Remote Plasma Source CH24P1	P24C	P24C



Dimensional Drawing — Unless otherwise specified, dimensions are nominal values in inches for reference only.

mks
www.MKSINST.com

RPS-CH24P1_02/22

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