

RF Ion Sources

RFMax Series High Current Density, High Purity, Low Maintenance
Applications IBAD, IBD, MEMS



RFMax-Series

Ion Beams for Processing and Deposition

Beams of accelerated ions are used to modify and erode surfaces under vacuum conditions. By carefully selecting the energy and composition of an ion-beam, this can be used, for example, to improve significantly the characteristics of a growing film by both densifying the film and modifying the chemical composition of the film. Alternatively, ion beams can be used to erode (mill) existing films or sputter a target material to project a plume of material for deposition on a substrate. In the latter case, the growing films can have excellent qualities for many applications owing to the elevated kinetic energy of the sputtered material.



MANTIS Broad Beam RF Ion Sources

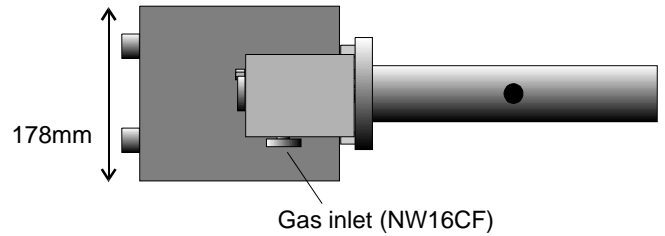
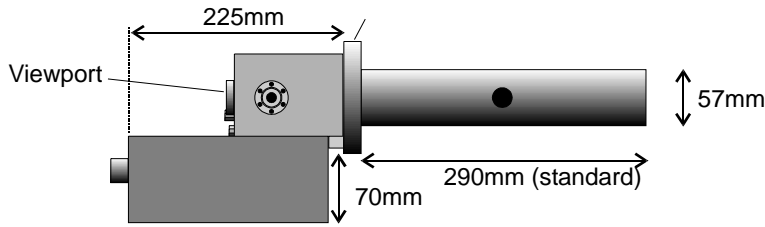
The RFMax Series are designed to operate with high current density and low contamination levels. The enhanced plasma is entirely contained within a high-purity ceramic zone resulting in the minimum of metallic contamination. The sources use either a dual or triple grid system to accelerate the ion beam towards the target. The grid configuration is carefully arranged to ensure minimal beam impingement on the outer grids resulting in maximum beam throughput and prolonged grid lifetime.



All MANTIS RFMax sources are available with a range of automation options as well as beam neutralization. A uniquely designed, low back-sputter beam sampler is also available to measure the actual beam current.



RFMax30 (not to scale)



RFMax30

RFMax60

Mounting flange	NW63CF	NW100CF
In vacuum length	290mm (standard)	290mm (standard)
In-vacuum Diameter	57mm	96mm
Gas Compatibility	O ₂ , N ₂ , H ₂ , Ar	O ₂ , N ₂ , H ₂ , Ar
Cooling	Water (0.5 l/min required)	Water (0.5 l/min required)
RF Power	30-600W	30-600W
Gas Flow	8-10 sccm	10-15 sccm
Beam Energy	0.1-1keV	0.1-1keV
Current Density	Up to 5mA/cm ²	Up to 6mA/cm ²

Accessories

Plasma Emission Monitoring - The source can be equipped with a plasma monitor to aid in the operation and striking of the source

Automatic Matching Unit - The manual matching unit can be replaced with an automatic matching unit to relieve the user of the task of making minor adjustments as plasma conditions change.

Beam Neutraliser - A beam thermaliser can be added to the end of the source to inject electrons into the ion beam to ensure that the total charge arriving at the sample is near zero. This allows ion-beam sputtering of dielectrics and better beam optics to be achieved.

MANTIS Deposition Ltd
 2 Goodson Industrial Mews
 Wellington Street
 Thame, Oxon. OX9 3BX
 UK
 Tel (UK): +44 1844 260160
 Fax (UK): +44 1844 260421
 USA East Coast: 585 671 9229
 USA West Coast: 760 749 6600
 sales@mantisdeposition.com



MANTIS
 MANTIS DEPOSITION LTD