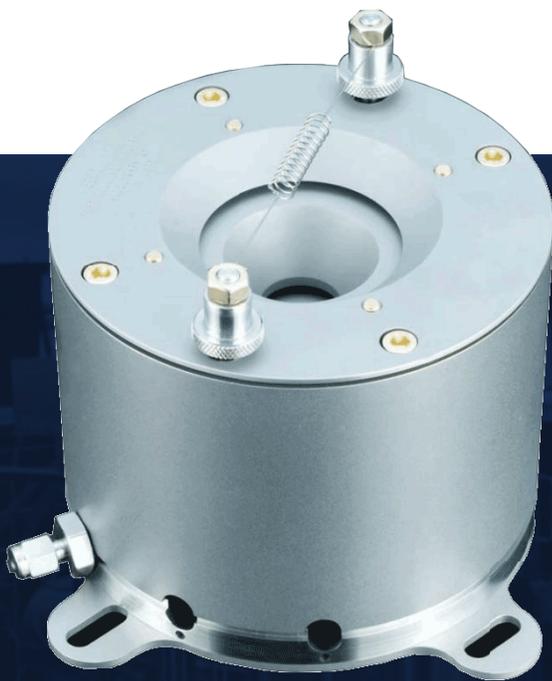




Mark II+ Ion Source

Gridless End-Hall Ion Source with Filament Cathode

Radiantly Cooled - Industrial Vacuum Applications



- Gridless End-Hall design eliminates grids and reduces contamination sensitivity
- Radiant cooling requires no external water cooling
- High beam current capability up to ~1-2 A (gas dependent)
- Low energy operation with mean ion energy \approx 60-80% of anode voltage
- Industrial-grade construction with stainless steel body and gold-plated hardware for reliable electrical contact

TECHNICAL SPECIFICATIONS

Maximum continuous discharge power	900 W
Anode voltage (VA)	~50–300 V (argon, original design) ~110–300 V (oxygen, original design)
Low voltage option	Argon: ~40–300 V Oxygen: ~90–300 V
Anode current (IA)	~1–5 A @ 180 V ~1–3 A @ 300 V (power limited)
Mean ion energy	30–180 eV (≈60% of VA setpoint)
Maximum ion beam current	~1–2 A (argon/oxygen dependent)
Neutralization current	5–20% of IA (typical)
Base pressure (recommended)	$\leq 1 \times 10^{-4}$ Torr
Operating pressure	$0.5\text{--}1.0 \times 10^{-3}$ Torr
Maximum operating pressure	1×10^{-3} Torr
Recommended pumping speed	≥ 700 L/s
Gas types	Argon, Oxygen, Nitrogen, inert gases
Gas purity	$\geq 99.999\%$
Gas flow range	5–100 sccm
Cooling method	Radiant (no water cooling required)
Cathode type	Hot filament
Dimensions (L × Ø)	111 mm × 140 mm (4.4 in × 5.5 in)
Weight (source only)	5.9 kg (13 lb)
Mount footprint	7.4 in (189 mm)
Mount bolt circle	6.3 in (160 mm)

Mark II+ Ion Source Filament Cathode - Radiantly

The Mark II+ (Filament Cathode – Radiation Cooled) Ion Source is a gridless end-Hall ion source designed for industrial vacuum processing applications requiring high current density and low ion beam energies. Its robust stainless steel construction and radiant cooling design eliminate the need for water cooling while providing stable operation for precleaning and ion-assisted deposition processes. The source operates with a filament cathode and magnetic confinement to generate a broad, neutralized ion beam with mean ion energies suitable for surface modification, cleaning, and film property enhancement.

Mark II+ Mounting Configurations

