



Description

RBD Instruments' IG2 Ion Source Package is the ideal solution for sputter cleaning of samples under UHV conditions. The IG2 Ion Source Package consists of the Model 04-165 2 kV Backfill Ion Source and the Model 32-165 Ion Source Control. These units are interchangeable with the PHI® 04-161 and 04-162 ion guns and the PHI® 20-045 control, respectively.

The Model 04-165 Backfill Ion Source generates an energetic inert gas ion beam for sputter-etching solid surfaces. The source requires a static pressure of 5×10^{-5} torr with an inert gas such as argon. Ions are generated by electron impact within the ion source's dual filament ionization chamber and are then focused at the target with energies of up to 2 kV. The impurity content of the ion beam is minimized by using an off-axis filament geometry. A focusing lens permits high ion current density to be obtained for a given operating pressure and source-to-sample distance. A dual tungsten filament assembly permits continued operation when the first filament opens. The expected lifetime of the filament assembly is several years under normal usage at the recommended operating conditions. The filament assembly is easily replaced in the field.

The Model 32-165 2 kV Ion Source Control provides all the necessary voltages and currents required to operate the Model 04-165 2 kV Backfill Ion Source. The beam voltage may be activated manually, remotely, or with the built-in timer. Additionally, the anode (ion) and filament currents as well as the beam and focus voltages may be externally monitored to ensure accurate reproduction of sputtering conditions.

Advantages

Unique 04-165 Features

- ◆ Fits on standard 2.75" flange (1.35" ID tube; 1.5" OD)
- ◆ Designed for easy maintenance

Unique 32-165 Features

- ◆ Built-in timer for sputtering
- ◆ Hour meter to track filament lifetime

04-165 Backfill Ion Source and 32-165 Ion Source Control

04-165 Specifications

Source Type	Hot filament electron impact (dual filament, backfill type)
Beam Energy	0.5 to 2 kV
Beam Diameter	
at 25 mm working distance	2.5 mm FWHM (at target)
at 50 mm working distance	3.5 mm FWHM (at target)
Maximum Total Target Current	10 μ A at $V_B = 2$ kV.
Current Density	
at 25 mm working distance	200 μ A/cm ² when $V_B = 2$ kV, Emission Current = 30 mA
at 50 mm working distance	100 μ A/cm ² when $V_B = 2$ kV, Emission Current = 30 mA
Mounting	Standard 70 mm (2.75") CF bored flange OD, approx. 34.3 mm (1.35") ID minimum tube required
Flange to End of Optics	7.00" or 9.25" (2.25" less with optional x-y aligner)
Working Distance	Typically 50 mm (2.00") end-of-optics-to-target

32-165 Specifications

Input Power	90-264 VAC @ 47-63 Hz, single phase
Beam Supply Voltage	500 to 2000 V in 500 V increments
Controls	
Beam Control	Manual, Timer, Remote (TTL high \rightarrow on)
Beam Voltage	4-position switch
Focus Voltage	5-turn potentiometer
Filament Current	5-turn potentiometer
Timer	1-turn potentiometer (0-60 min.)
Front Panel Monitors	
Beam	0 to 4 V corresponds to 0 to 2 kV
Focus	0 to 4 V corresponds to 0 to 2 kV (referenced to V_B)
Filament	0 to 5 V corresponds to 0 to 2.6 A
Anode Current	0 to 5 V corresponds to 0 to 100 μ A
Cooling	Convection
Dimensions	19" rack mount x 14" deep x 3" high

All Specifications are subject to change without notice.



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