

# NEW

# UNISOKU IB201

## 2kV Backfill Ion Source and Control

### Description

UNISOKU IB201 sputter Ion gun is the ideal solution for sputter cleaning of samples under UHV conditions. IB201 sputter Ion gun consists of the Model 04-165 2kV 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  $5 \times 10^{-5}$  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 2kV. 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 2kV Ion Source Control provides all the necessary voltages and currents required to operate the Model 04-165 2kV 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

## Specifications

- **04-165**
  - **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  $\mu$ A at  $V_B = 2$  kV.
  - **Current Density**
    - at 25 mm working distance ..... 200  $\mu$ A/cm<sup>2</sup> when  $V_B = 2$  kV, Emission Current = 30 mA
    - at 50 mm working distance ..... 100  $\mu$ A/cm<sup>2</sup> 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**
  - **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  $\mu$ A
  - **Cooling** ..... Convection
  - **Dimensions** ..... 19" rack mount x 14" deep x 3" high



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Instrumental components subject to change without prior notice for improvement in performance.