

TB-184 Nonsequitur Model 1401 High Performance Ion Gun / Power Supply



This high performance ion gun, *HeatWave Labs* Model 101399, is ideal for use in surface chemistry experiments such as sample preparation and depth profiling with Auger and ESCA. It can be used with most inert gases.

With a beam current of 20 μ A into a 0.4mm diameter spot at a working distance of 25mm, the gun can deliver 10 times the current density of other commonly available ion guns. Select spot sizes down to 50 μ m at a beam current of 1 μ A from the front panel. Beam energy is variable from 5eV to 5keV while maintaining best focus at the sample. Beam current is adjustable independent of beam voltage over a wide range and is measurable from the front panel without external equipment.

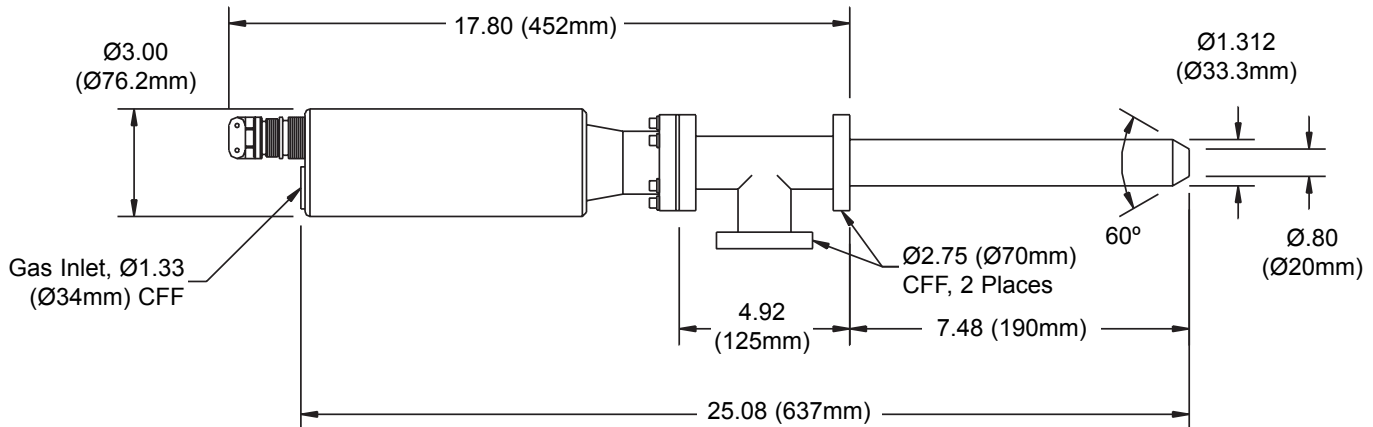
Ion generation is by means of electron impact ionization, with dual filaments for long life of the source without having to break system vacuum. Ion source filaments are off axis to prevent line of sight deposition of the filaments material onto the sample. The ion source may be differentially pumped either directly into the system vacuum or by means of an optional port into a separate turbo pump for improved system vacuum.

The controller with power supplies and scan electronics is housed in a single 5 $\frac{1}{4}$ " high x 19" rack mount cabinet. The Ion Gun can be controlled either from the front panel or through a flexible interface allowing control of beam and focus voltages, ionization current, gas, beam on/off, and raster. The raster scan is digitally generated for uniform etch rate.

Features

- High current density 15 to 50 mA/cm² depending on spot size selected
- Unique ion source design for stable emission
- Dual Tungsten filament, Yttria coated Iridium optional
- UHV construction
- Differential pumping port. Source may be pumped into main chamber with increased chamber pressure and/or reduced performance
- Gun is easily disassembled for cleaning of all internal components
- Electrical connections and gas inlet are all on rear of housing for simplified installation
- Preset extraction and condensor lens parameters (three spot size settings) for repeatable operation
- Integral measurement of beam current
- Direct measurement of ion source pressure
- System and cable interlocks prevent energizing high voltage with poor vacuum or cable removed
- Power supply and raster generator in single 5 $\frac{1}{4}$ " high x 19" rack mount enclosure
- Digitally generated raster for uniform etch profile
- Computer control option
- Optional ion source pressure regulation

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Specifications

- **Beam Energy** **50V to 5000V, continuously variable**
- **Beam Current** **20 μ A maximum (Argon) @ 5kV beam energy. Less than 1nA minimum.**
- **Spot Size** **0.4mm @ 20 μ A, 5kV, 25mm working distance. 50 μ m @ 1 μ A, 5kV, 25mm working distance.**
- **Working Distance** **5mm to 25cm**
- **Raster Area** **1cm²**
- **Electrical Requirements** **115/220V 50/60Hz Autoselect
(125 Watts Max. Power From Wall)**
- **Mounting Flange** **2-3/4" (70mm) Conflat**
- **Gas Inlet** **1-1/3" (34mm) Conflat**
- **Differential Pumping Port** **2-3/4" (70mm) Conflat**