

50 eV to 5 keV Cs, Li, Na, K, Rb ALKALI METAL ION BEAMS

FOR USE IN:

SECONDARY ION MASS
SPECTROMETRY
ION ACCELERATORS
SURFACE PHYSICS
VACUUM PHYSICS

FEATURES / OPTIONS:

BEAM CURRENTS up to $5 \mu\text{A}$
WIDE OPERATING ENERGY RANGE
UNUSUALLY SIMPLE OPERATION
CONTAMINATION IMMUNITY
RASTERING
LOW POWER CONSUMPTION
BAKEABLE TO 350°C
INTERCHANGEABLE WITH
GAS ION SOURCES
COMPUTER / REMOTE CONTROL



IGS-4 Ion Source Mounted on a 2 3/4 inch CFF

The Kimball Physics IGS-4 Ion Gun, with its matching IGPS-4 Power Supply represents a significant advance in alkali-metal surface-ionization ion-source technology. It is intended for use in a variety of mass spectrometry and surface physics applications. By use of different source firing units, the alkali ion beams of Cs, Li, Na, K, and Rb can be generated. The alkali metal is generated as needed by a solid-solid chemical reaction, and is then surface ionized and evaporated with low energy spread. The resulting ion beams can be generated down to low energies, and very low currents. Beam divergence and beam alignment are both controllable using a build-in electrostatic condenser lens and electrostatic centering deflection plates. The ion gun with its power supply is a complete subsystem ready to attach and turn on.

UHV technology is used throughout. The source may be completely disassembled for cleaning or repair. Source firing units are user replaceable, and can be inexpensively rebuilt at Kimball Physics. The source is not damaged by repeated exposure to atmospheric gases or water vapor when cold; and it may be run in vacuums from 10^{-11} torr to 10^{-5} torr. It is bakeable up to 350°C with cables removed. Non-standard mountings are available.

The IGPS-4 Power Supply Unit contains all power supplies necessary to generate the required voltages to run an IGS-4 Ion Gun. All power supplies are electronically regulated. An external connector allows control of all gun power supplies, including the floating supplies, via 0 to 10 V analog inputs at ground potential (deflection supplies use -10 V to +10 V analog inputs). All common computer interface bus types can be accommodated, by use of appropriate D to A converters.



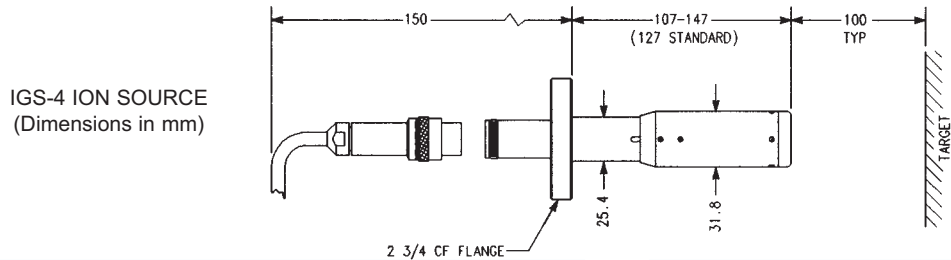
IGPS-4 Ion Source Power Supply

IGS-4 ION GUN SPECIFICATIONS

BEAM ENERGY	50 eV to 5 keV (Independently adjustable)
BEAM CURRENT	1 nA to 2 μ A (Independently adjustable) Ion species dependent
ENERGY SPREAD	Approx. 0.4 eV thermal spread, calculated
SPOT SIZE	Less than 1 mm to 10 mm (Independently adjustable)
WORKING DISTANCE	Typical: 100 mm. Range: 10 mm to 200 mm
BEAM DEFLECTION	Optional: 4 Pole Electrostatic: $\pm 5^\circ$ at 1500 eV
PULSE CAPABILITY (using appropriate pulse generator, not furnished)	Optional Dual Grid Power Supply: pulse width 1 μ s to DC, rep rates to 1 kHz
ION SPECIES	Cs ⁺ , Li ⁺ , Na ⁺ , K ⁺ , or Rb ⁺
ION GENERATION METHOD	Surface-ionization Alkali Alumino Silicate Plug. Directly heated, not harmed by atmospheric gases while cold
MOUNTING	Flange Adaptor with a 2 3/4 inch CFF
BEAM ALIGNMENT	Optional: Mechanical alignment with $\pm 2^\circ$ Port Aligner
INSERTION LENGTH	Standard: 127 mm. Range: 107 mm to 147 mm. Custom lengths available. Gun manufactured at standard length unless otherwise specified at time of order.
SOURCE DIAMETER	25.4 mm at gun flange. Necks up to 31.8 mm at 83 mm from flange
FEEDTHROUGHS	Multipin brazed ceramic, threaded stainless steel shell
CABLES / CONNECTORS	Multiconductor high voltage fully ground-shielded, with mating aluminum connector to connect gun and power supply. Standard lengths: 3 m Optional: 5 m
MAXIMUM BAKEOUT	350°C with cables removed

IGPS-4 ION GUN POWER SUPPLY SPECIFICATIONS

OUTPUTS	All necessary voltages to drive the IGS-4 Ion Gun
ENERGY STABILITY	$\pm 0.01\%$ per hour; $\pm 0.02\%$ per 8 hours at full output
BEAM STABILITY	$\pm 1.0\%$ per hour with Emission Current Control or $\pm 10\%$ per hour after warm up without ECC
CONTROLS	Energy, Focus, Grid, Source, Emission Current Control, X and Y Deflection (optional)
COMPUTER REMOTE CONTROL	All power supplies (except deflection): 0 to +10 volts Deflection power supplies: -10 to +10 volts
METERING	Digital: Energy, Focus, X and Y Deflection (optional); Analog: Emission, Grid, Source Volts, Source Amps
INPUT	105 to 125 VAC switchable to 210 to 240 VAC, 47 to 63 Hz, 100 W
DIMENSIONS (width x height x depth)	17 in. x 7 in. x 17 in. (432 mm x 178 mm x 432 mm); with rack mount kit, overall width is 19.5 in. (495 mm)



Typical performance;
data for guidance only.

