

Ion Beam Systems - ST55

The ST55 Ion Beam System has been specially developed to provide a cost effective solution for ion-based vacuum processes for medium to large sized deposition systems. The ST55 provides an extremely reliable and maintenance-free facility for many applications in PVD processes. The compact design and rugged construction allows easy installation to both new and existing vacuum deposition systems.

ST55 Features:

- Easy to use touch screen interface.
- Multi-Mode system operation – Continuous, Pulse, Gas Purge, Substrate Pre-clean - all at the touch of the screen.
- Save regularly used deposition procedures to file. Save up to 15 separate files with all operational parameters.
- Ion beam energies up to 225eV.
- Ion Beam power to 1.5 kilowatts.
- Anode currents to 7 amps.
- Full-time use of high purity oxygen.
- Highly efficient patented gas injection design greatly reduces gas load.
- Direct water-cooling to reduce maintenance, radiation load and venting delays.
- Extremely low maintenance. The patented design utilizes a specially coated anode, that resists build-up of electrically insulating oxide coatings. No need to change anodes for different gases.
- Extremely stable operation in IAD processes due to patented electrode design.
- Broad - beam divergence for large area coverage with a uniform ion flux.
- Rapid start-up – Only 3 seconds to stable operation from Start.
- Special Coiled Filaments provide >12 hours in pure oxygen per filament.
- **Pulse-mode Operation** for ion-assistance of radiation-sensitive film materials such as many commonly used infrared and UV thin film materials eg MgF_2 & LaF_2 . For further information please refer to separate information sheets.
- **Gas Purge Mode** provided to allow routine purging of gas lines. Automatically switches off at pre-set timeout or when gas flow reaches < 1% of flow range.
- **Pre-deposition Clean Mode** provided to easily pre-clean the substrates immediately prior to deposition.
- **Remote Control & Monitoring** of process parameters. A front panel control toggles control from local operator to remote master control and monitoring of all operational parameters via RS-232.
- Typical 10^{-5} torr range operation
- Dual Filament electronic system detects filament failure and automatically switches to 2nd filament



ION BEAM SYSTEMS SPECIFICATION – SERIES III ST55

Dimensions	Source diameter 75 mm diameter by 70 mm long Source weight – 1.4 kg
Beam power	Anode volts selectable to 225 volts; anode power 1500 W Anode current to maximum 7 amps under manual or automatic beam control
Beam divergence	Wide beam divergence in excess of 80 degrees
Gas flow	Approximately 8sccm required to produce 2 amps (typical)
Cooling water	minimum 2.5 liters/minute. Water flow is constantly monitored
Power Unit	weight approx. 30 kg 135mm x 480mm x 406mm

Options Available:

Dual Gas DG. Option provides facility to deliver either of two installed gases in either pure gas or specified gas mix ratio. Gas mixture is set from the touch screen.

Ion Current Monitor. Provides real-time monitoring of Ion Flux, with electronics built into the power supply, together with sensor head, feed through and cables.

Mounting Hardware MH. Several options are available. The mounting brackets are clamped to a special gas feedthrough.

Complete Series III ST55 package includes:

- ST55 Ion Source.
- ST55 Series III Power supply - 208 or 230 VAC, single phase 50 or 60Hz; 10 amps.
- Gas flow controller supplied 30 sccm Alicat Scientific.
- Operational, maintenance and service manual.
- All feedthroughs – gas, electrical & water.

Complete system supplied with all hardware for Installation to new or existing vacuum systems. All vacuum feedthroughs for process cooling water, reactant gas and electrical supply are supplied to individual requirements. Vacuum chamber flange types supplied to individual requirements.



ST55 Series III power supply
with Touch Screen interface