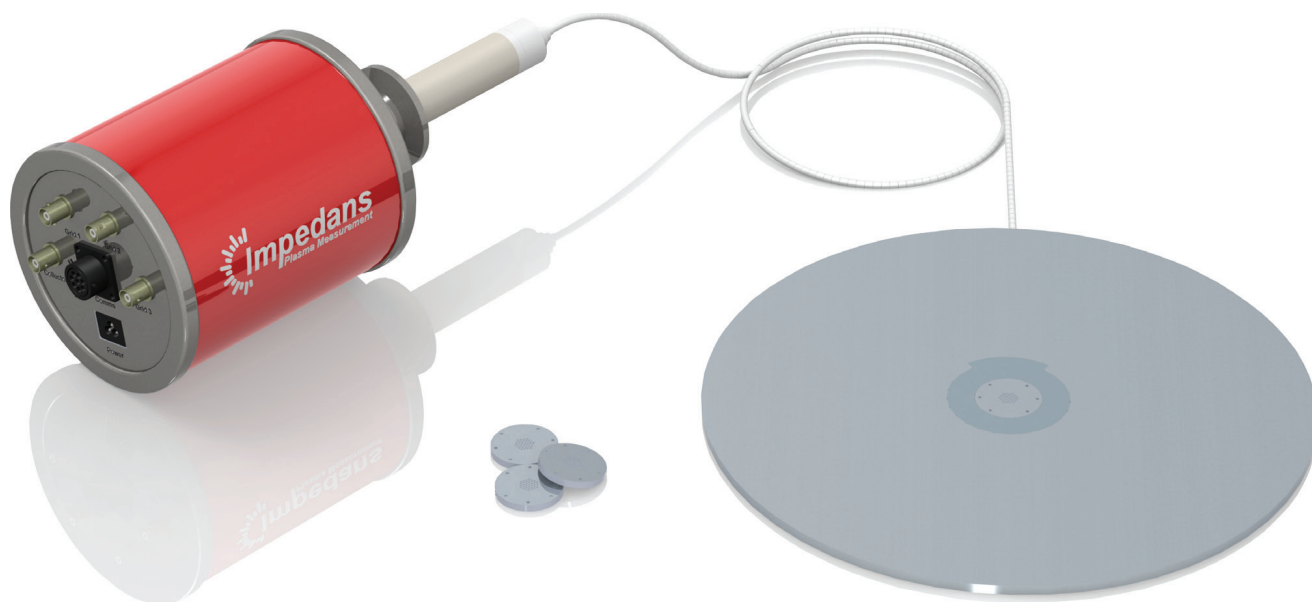




High Energy Plasma Surface Ion Energy Analyser



Multi-Grid Retarding Field Energy Analyser High Voltage Substrate Mounted RFEA



The **Semion 2500™** is a precision plasma measurement instrument used in a large number of plasma laboratory applications covering both low and high ion energies. The **Semion 2500™** is the key instrument used by scientists to measure the ion energy and flux arriving at a surface in a plasma process chamber.

The **Semion 2500™** can be placed on a high voltage biased or grounded surface. Among the key parameters measured are Ion Energy, Ion Flux, Electron Energy, Plasma Potential and Floating Potential. The **Semion 2500™** provides plasma parameter measurement in ion beam applications and in DC, RF, Microwave, Continuous and Pulsed plasma. The **Semion 2500™** is the most advanced and trusted, fully automated retarding field energy analyser on the market.

The **Semion 2500™** helps the user to understand ion surface interactions and the ions impact on surface treatment. The **Semion 2500™** is an essential plasma process diagnostic to understand the correlation between plasma inputs and the plasma state. The **Semion 2500™** reduces process and tool development time, as well as the time to market for new plasma products. Pulsed plasmas are used to tailor the electron or ion energy and **Semion 2500™** is an integral part of such process development.



Key Indicators

Substrate mounted Retarding Field Energy Analyser Probe

- In-situ measurement of:
 - Ion Energy Distribution
 - Ion Flux
 - Ion Current
 - Electron Flux and Energy
- Measurement of Ion Energies up to 2500eV at pressures up to 300mT
- Easy to install, no chamber retrofit required
- Portable system allowing analysis in multiple chambers using single system

Benefits

- High Energy
- Robust and Easy to Install
- Easy to Use
- Real Time Measurements
- Replaceable Button Probe Sensors
- Sensor holder sits on a high voltage bias or grounded surface
- Fully automated software analysis
- Custom holder materials available



Specifications

Semion 2500	
Ion Energy Range	0 to 2500eV*
Ion Current	2mA DC max
Ion Flux	0.1 - 20mA/cm ²
IEDF Resolution	± 1eV nominal

**dependant on DC bias*

RFEA Probe	
Probe Configuration	3-grid & 4-grid options
Button Probe Diameter	32mm
Holder Diameter	70mm, 100mm (4"), 300mm (12") as standard
Holder Thickness	5mm
Mounting	RFEA Probe holder mounted on electrode
Probe Enclosure Material	Aluminium, anodized aluminium, stainless steel & Al ₂ O ₃
Probe Holder Material	Aluminium, anodized aluminium, stainless steel & Al ₂ O ₃
RFEA Probe Cable Length	500mm standard (custom available)

Feed-through Assembly	
Flange type	KF40 standard, CF40

Control Unit Electronics	
Voltage Range	-2kV to 0V (suppression voltage)
	-1.5kV to +1.5kV (grid voltages)
Current range	100pA to 2.4mA
Connectivity	USB 2.0

Application Software	
Operating System	Windows 2000/XP/Vista/Windows 7 Compatible



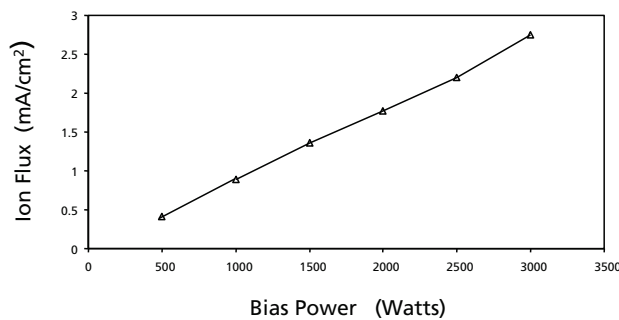
Product Operating Parameter Table

High	> 10 ⁵ Pa	>760 Torr	> 5000°	> 10 ¹⁴ cm ⁻³	SiH ₄	Microwave (3 GHz - 20 GHz)	> 100 KeV
	1000Pa - 10 ⁵ Pa	10 - 760 Torr	5000°	10 ¹² - 10 ¹⁴ cm ⁻³	C ₄ F ₈ , SF ₆	Microwave (1 GHz - 3 GHz)	10 - 100 KeV
	100Pa - 1000Pa	1 - 10 Torr	1000°	10 ¹⁰ - 10 ¹² cm ⁻³	CHF ₃	UHF (100 MHz - 1 GHz)	2500 - 10,000 eV
Medium	10Pa - 100Pa	0.1 - 1 Torr	500°	10 ⁸ - 10 ¹⁰ cm ⁻³	Cl	RF (1 MHz - 100 MHz)	800 - 2,500 eV
	1Pa - 10Pa	10 - 100 mTorr	200°	10 ⁶ - 10 ⁸ cm ⁻³	O ₂	MF (0 - 1 MHz)	400 - 800 eV
	0.1Pa - 1Pa	1 - 10 mTorr	100°	10 ⁴ - 10 ⁶ cm ⁻³	N ₂	pDC (0 - 350 kHz)	100 - 400 eV
Low	< 0.1 Pa	< 1 mTorr	20°	< 10 ⁴ cm ⁻³	Ar, He	DC (0 kHz)	0 - 100 eV
	Pressure (Pascal)	Pressure (Torr)	Gas Temperature	Density	Gas Reactivity	Power Frequency	Ion Energy

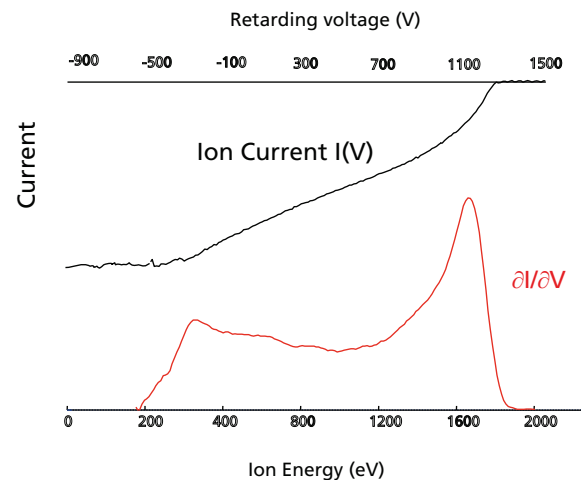
System Operating Parameters Beyond Operating Parameters

Graphical Data

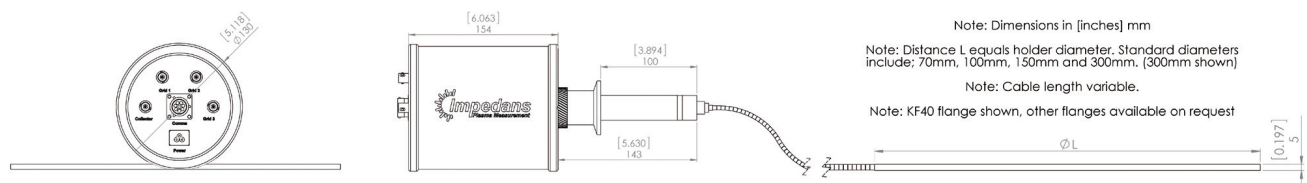
Ion Flux to Biased Substrate using Semion 2500



Ion Current and IEDF taken from derivative of Ion Current



Product Dimensions





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