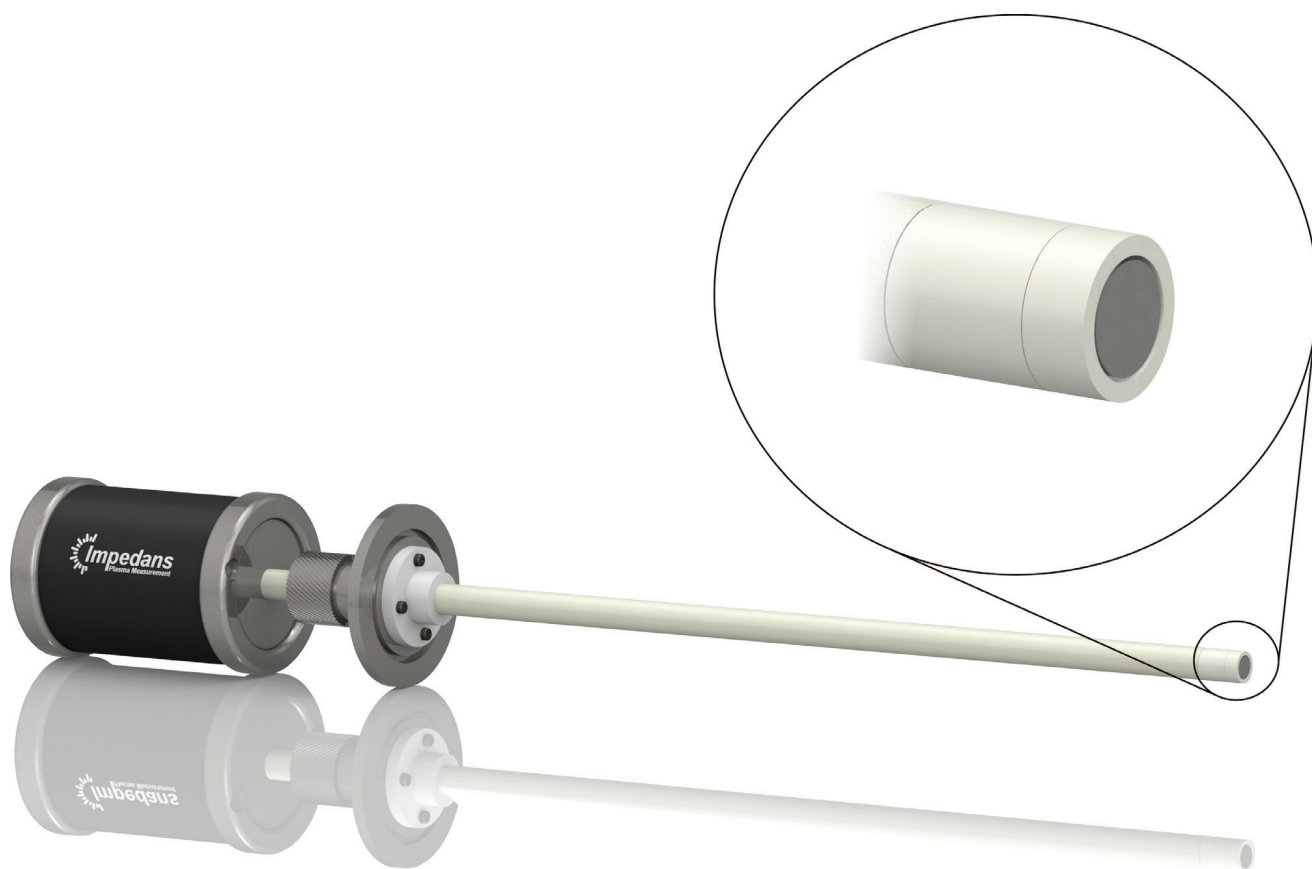


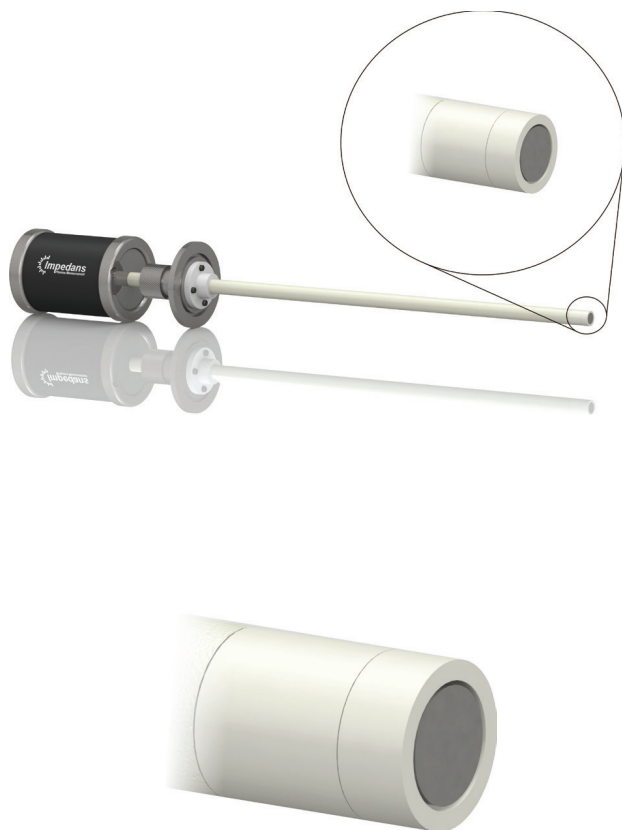
Langmuir PlatoProbe™

Deposition Tolerant Langmuir Probe



Langmuir Probe for Deposition Plasma
Ultra-Fast Bias Planar Langmuir Probe
Automated Pulsed Plasma
Measurement

Floating Potential
Plasma Density
Ion Current Density
Electron Temperature



The **PlatoProbe™** is a planar Langmuir Probe designed to work in deposition plasmas even when an insulating film is deposited on the probe surface. The **PlatoProbe™** is the first Langmuir probe on the market that can operate in plasmas with high deposition rates. A unique feature of The **PlatoProbe™** is its ability to measure accurately key plasma parameters through a deposited layer several tens of microns thick. The deposition of insulating layers does not affect the accuracy of the probe measurement.

The **PlatoProbe™** is a unique instrument enabling scientists to measure the electron density, ion density, electron temperature and floating potential of plasma including deposition plasma. The **PlatoProbe™** provides plasma parameter measurement in DC, RF, Microwave, Continuous and Pulsed plasma. The **PlatoProbe™** has the most advanced patented technology on the market using ultrafast biasing to penetrate the deposited film to obtain accurate measurements of the real plasma parameters in a wide range of plasma applications.

The **PlatoProbe™** is used to establish plasma process repeatability, even in reactive gas plasma. It is the perfect instrument to understand plasma changes and the impact on surface treatment. The **PlatoProbe™** is an essential plasma process diagnostic to understand the correlation between plasma inputs and the plasma state. The **PlatoProbe™** 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 The **PlatoProbe™** is an integral part of such a process development.



Key Indicators

Time Resolution	1 μ S
Plasma Power Source	DC, RF, Microwave, Continuous, Pulsed Plasma
Electron Density	1x10 ⁶ to 3x10 ¹³ cm ⁻³
Ion Density	1x10 ⁶ to 3x10 ¹³ cm ⁻³
Ion Current Density	1uA/cm ² to 300mA/cm ²
Electron Temperature	0.1 to 15 eV

Benefits

- Designed for Deposition Plasma
- Robust and Easy to Install
- Easy to Use Software
- Real Time Measurements
- Easy to Replace Probe Tips
- Custom Probe Shafts Available
- High Degree of Accuracy
- Key Instrument for Measuring Plasma Parameters
- Pulsed Power Compatible
- Broadband RF



Specifications

Plasma Parameters	
Plasma Density	1×10^6 to $3 \times 10^{13} \text{cm}^{-3}$
Ion Current Density	$1 \mu\text{A}/\text{cm}^2$ to $300 \text{mA}/\text{cm}^2$
Electron Temperature	0.1 to 15 eV

Langmuir Probe	
Plasma Power Source	DC, RF, Microwave, Continuous, Pulsed Plasma
RF Plasma	Broadband Probe 2MHz to 100MHz
Probe Length	300mm to 1400mm (Custom Available)
Probe Diameter	9.5mm
Probe Tip Diameter	7mm
Customisation	On request
Maximum Operating Temperature	230°C

Electronics Control Unit	
Probe Voltage Scan Range	Floating potential $\pm 30\text{V}$
Current Range	100nA to 20mA
Communication	USB 2.0
Sampling Rate	80 MSPS (V,I)
Data Acquisition Resolution	4.5mV, 4.5nA
Time Resolved Step Resolution	$1 \mu\text{s}$ to 1mS
External Trigger	TTL Compatible 10Hz to 50KHz

Application Software	
Operating System	Windows 2000, XP, Vista, Windows 7



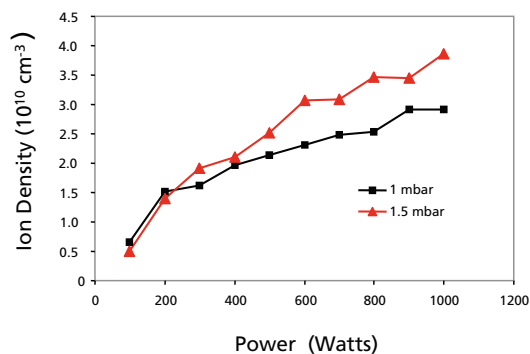
Product Operating Parameter Table

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

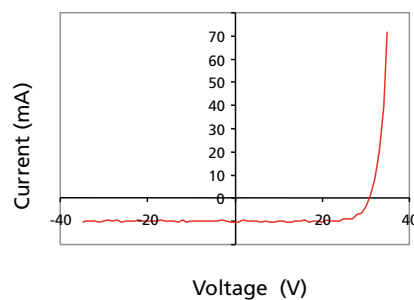
System Operating Parameters Beyond Operating Parameters

Graphical Data

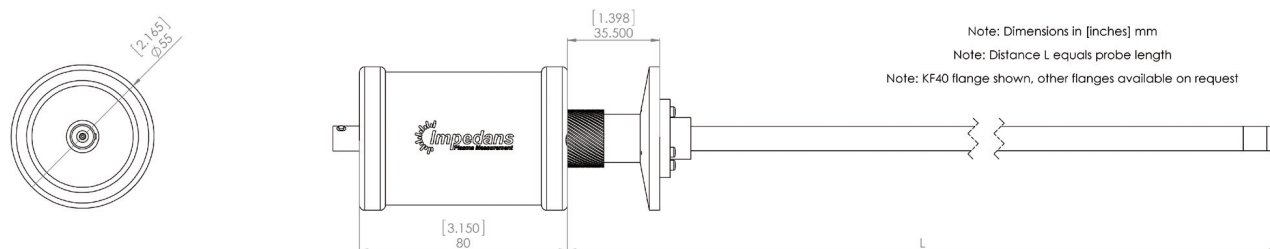
Measurement of ion density in Silane plasma using Langmuir Plato Probe™



Real Current – Voltage characteristic of RF biased Planar Plato Probe



Product Dimensions





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