



Plato™ Probe System

Deposition Tolerant Langmuir Probe

Novel Langmuir Probe designed for use in Deposition Plasma Systems

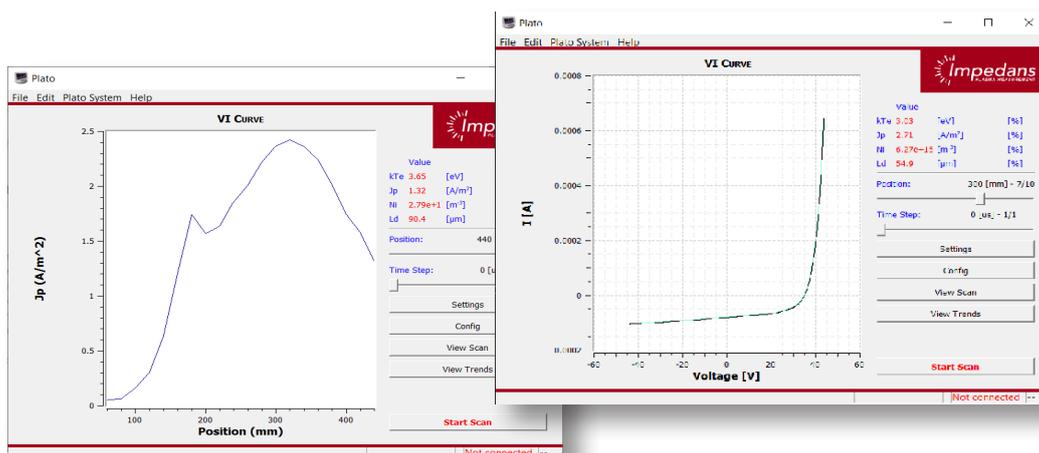
The Plato Probe is a planar Langmuir Probe designed to work in deposition plasmas when an insulating film will be deposited on the probe surface. The deposition tolerant probe can remain inside a plasma reactor while deposition processes are in progress. This allows the plasma parameters such as plasma density, ion current density and electron temperature to be measured in systems where a standard Langmuir probe would not be suitable, such as plasma enhanced chemical vapour deposition (PECVD) systems. This probe also has a sync function for time resolved measurements, to look at plasma evolution in Pulsed DC and HiPIMS processes with 1 microsecond resolution.

Key Features

-  Measures plasma density, ion current density and electron temperature even with an insulating layer covering the tip (up to 10 microns).
-  Time averaged, time trend and synchronised pulse profile.
-  Integrated linear drive mechanism available to automatically profile spatial plasma uniformity.
-  Advanced models for pressure compensation included in the software, with a reanalysis function for old data sets.
-  Compatible with DC, Pulsed DC, RF, Pulsed RF, Microwave and other plasma excitation methods.
-  1 microsecond resolution available for pulsed processes, with a TTL port for pulse.

Key Benefits & Applications

-  State of the art plasma models built into the software for automatic data analysis.
-  Intuitive and user-friendly interface with built in models and graphing functions.
-  Compatible with deposition processes where standard DC Langmuir probes cannot be used.
-  Robust and durable design to survive in extreme plasma environments.
-  Custom probe options including right angle elbows and flexible probe shafts to fit any chamber.
-  Provides measurements for fundamental research, process development and model benchmarking.



Model Specifications

Model #	Product Name	Description
02-0073-01	Fixed Probe 10 mm	9.5 mm OD, rigid, Alumina Shaft (<1.4 m length)
02-0240-01	Flexible Probe	Rigid tip section with flexible ceramic beaded cable
02-0239-01	Feed-through for flexible shaft models	Feed-through for flexible Plato Probes
02-0238-01	Electronics Unit	VI scanning and measurement electronics

Model #	Product Name	Current Range
02-0507-01	150mm Linear Drive	For rigid probe shafts only
02-0033-03	300mm Linear Drive	For rigid probe shafts only
02-0034-04	450mm Linear Drive	For rigid probe shafts only
02-0035-04	600mm Linear Drive	For rigid probe shafts only
02-0508-01	900mm Linear Drive	For rigid probe shafts only

General Specifications

Probe length	100 mm to 1400 mm, Customisable
Probe tip diameter	7 mm as standard (customisable)
Probe tip material options	Aluminium, Stainless steel
Max. operating temperature	125 °C
Plasma reactor types	DC, Pulsed DC, RF (60 MHz ≥ RF ≥ 5 MHz), Pulsed RF, Microwave
Linear drive options	150, 300, 450, 600 & 900 mm
Time resolved step resolution	1 μs
Voltage scan range	Floating potential ±30 V
Current range	300 μA to 20 mA
Sensor pulse synchronisation	External sync: TTL input trigger (10 Hz to 10 kHz)

Plato Probe System Plasma Parameter Ranges

Plasma Density	4×10^8 to 3×10^{13} cm ⁻³
Ion Current Density	26 μA/cm ² to 300 mA/cm ²
Electron Temperature	0.1 eV to 15 eV
Debye Length	0.4 μm to 1.4 mm

Operating Parameter Ranges

Pressure	< 0.1 Pa to 1,000 Pa < 1 mTorr to 10 Torr
Gas Reactivity	Inert to Highly Reactive



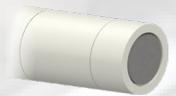
Electronics box



Fixed probe



Linear drive



Probe tip



Flexible probe with surface mount holder