

Product Information

The Impedans Automated Langmuir Probe (ALP) System™ provides a powerful diagnostic for measuring key plasma parameters in low and medium pressure discharges.

High Resolution Plasma Characterisation is possible with the state-of-the-art Langmuir Probe and ALP Control Unit electronics. Using an intelligent pre-scan feature, the optimal plasma parameter measurements can be performed easily and repeatedly.



ALP System™ Langmuir
Probe & Control Unit

Features

The Impedans ALP System™ can provide the following primary plasma parameters in real-time:

Measure

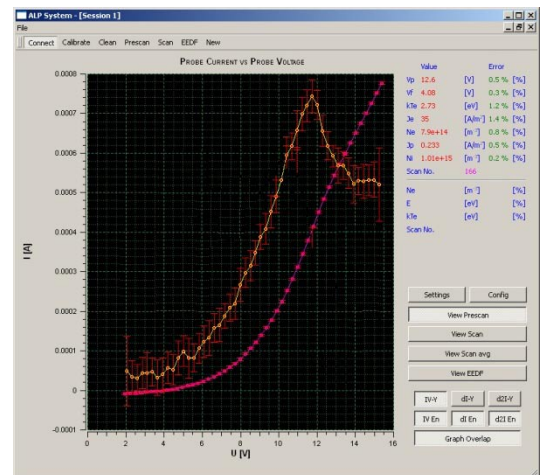
- Plasma Potential
- Plasma Density
- Electron Temperature
- Ion current Density
- EEDF

Probes

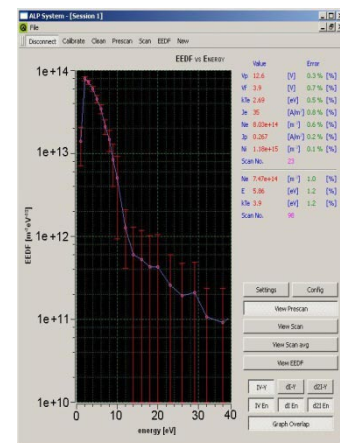
The ALP System™ supports plasma diagnostic measurements in DC, pulsed DC, microwave and RF plasmas. The standard probe length is 300mm, and probe lengths up to 1.4m are supported. The probe tip holder is designed to prevent any increase in probe collection area which can be caused by a sputtered conductive layer.

Probe tips are easily serviced due to the “Easy-Fit” probe design. Probe tips materials of tungsten, molybdenum and invar are available.

Custom probe lengths, diameters, materials, and shapes can be supplied on request.



ALP System™ Software



EEDF Plot

Probe Tip Cleaning

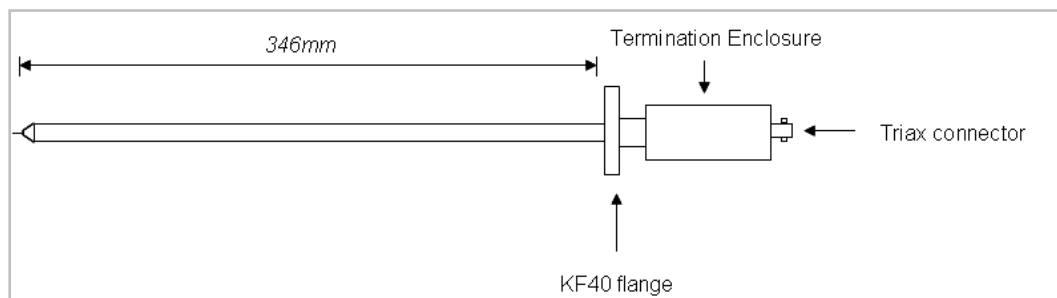
An automated probe tip cleaning feature is provided as standard to facilitate the cleaning of the probe tip after prolonged use. This is especially useful in the case where a depositing plasma is present. Both automated and manual cleaning procedures are supported by the ALP System™ application software.

Time-Resolved Measurements

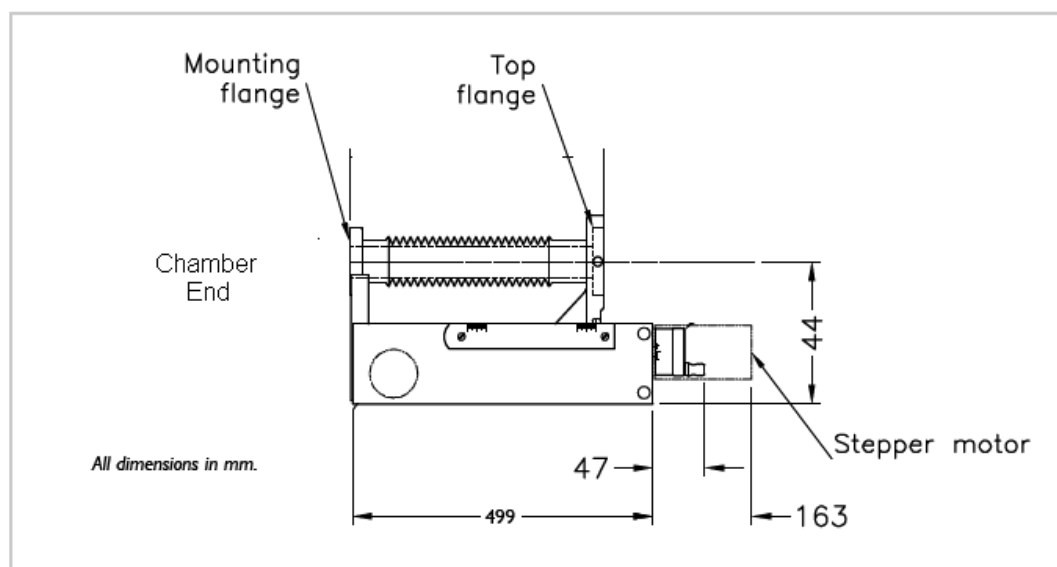
A high-speed “advanced boxcar” mode is available to support high resolution time-resolved measurements with a time-step resolution of 12.5nS. Trigger frequencies up to 1MHz are supported, and a programmable delay allows gating of the system measurements.

Spatial Profile measurements

An Automated Linear Drive System may be used to deliver the Langmuir Probe to the plasma with a step resolution of 0.025mm. The key plasma parameters can be plotted relative to the probe position to present a clear picture of the plasma properties across the bulk of the plasma.



ALP System™ Standard RF Langmuir Probe



ALP System™ Automated Linear Drive System with integrated Stepper motor

SPECIFICATIONS

Plasma Parameters		ALP System™ Control Unit	
Floating potential (Vf)	-145V to 145V	Probe Voltage Scan Range	-150V to +150V
Plasma potential (Vp)	-100V to 145V	Probe Current range	100pA to 150mA
Plasma density (Ne)	10 ⁸ to 10 ¹² cm ⁻³	Communication	USB 2.0
Ion Current Density (Ni)	1uA/cm ² - 30mA/cm ²	Sampling rate	80 MSPS (V,I)
Electron temperature (kTe)	0.1 to 15eV	Data Acquisition Resolution	4.5mV 100pA
Electron energy distribution function (EEDF)	0-100eV	Time Resolved step resolution (boxcar mode)	12.5nS
Langmuir Probe		External Trigger	TTL compatible, 1MHz
DC, pulsed DC, Microwave plasma	Standard Probe	Application Software	
RF plasma	Broadband Probe 2MHz – 100MHz	Operating System	Windows 2000, XP, Vista, Windows7
Length	300mm to 1.4m, other lengths on request	Automated Linear Drive System	
Diameter	2mm to 5mm	Stroke	300mm, 600mm, 900mm, 1.4m, on request
Customisation	45° bend, 90° bend, multiple bend	Maximum speed	25mm/sec.
Max. operating temperature:	230°C without cooling	Step resolution	0.025mm
		Bakeout Temperature	230° C.
		Vacuum	Leak Rate better than 1 x 10 ⁻¹⁰ mbar.l.sec ⁻¹

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