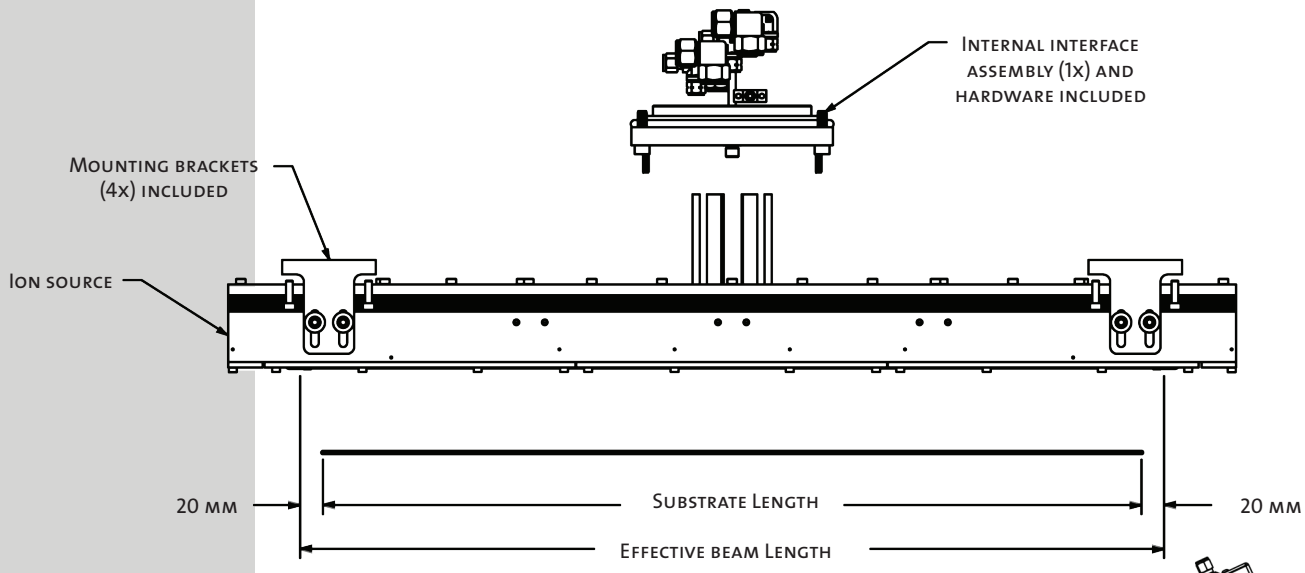
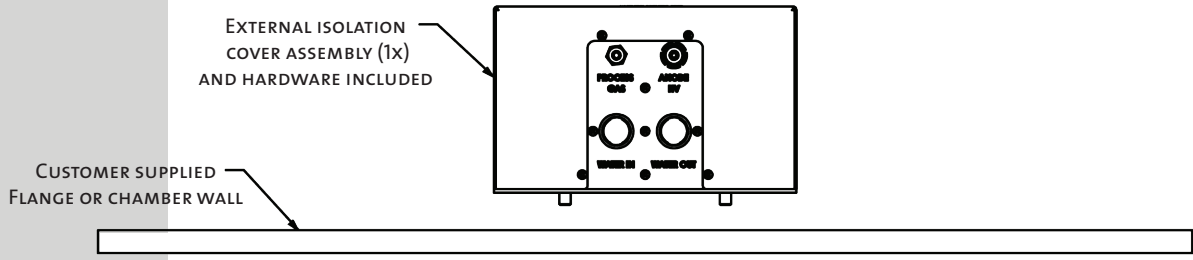
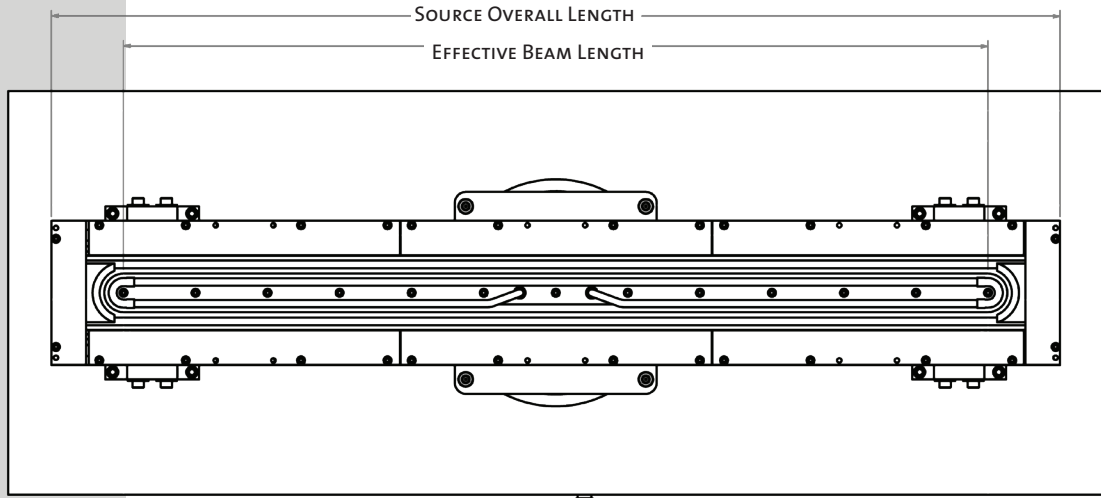




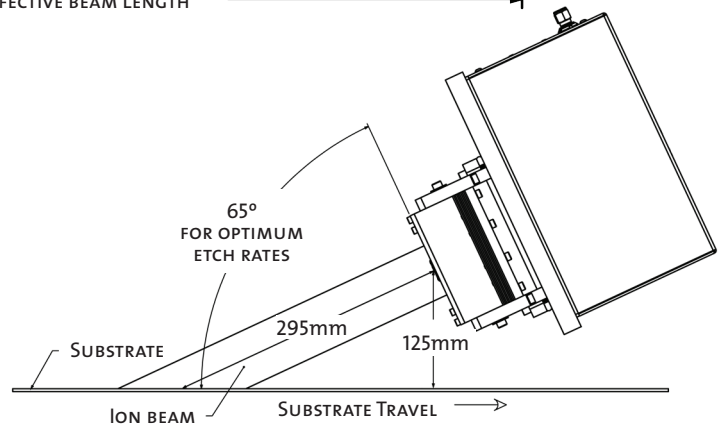
GENERAL PLASMA INC.™

# POINTED POLE ANODE LAYER ION SOURCE

## FLANGE MOUNT SPECIFICATION SHEET



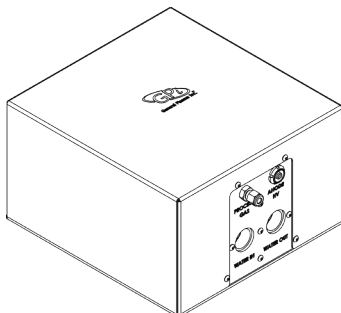
RECOMMENDED SOURCE SUBSTRATE DISTANCE (AS SHOWN)	125mm
RECOMMENDED SUBSTRATE ANGLE	65°



# POINTED POLE ANODE LAYER ION SOURCE SPECIFICATIONS

	PPALS30	PPALS36	PPALS56	PPALS81	PPALS112	PPALS142	PPALS203	PPALS304	PPALS325
<b>OVERALL SOURCE LENGTH</b>	43.2 cm [17 in]	48.7 cm [19 in]	68.7 cm [27 in]	93.7 cm [37 in]	124.7 cm [49 in]	154.7 cm [61 in]	215.7 cm [85 in]	316.7 cm [125 in]	337.7 cm [133 in]
<b>EFFECTIVE BEAM LENGTH</b>	30.5 cm [12 in]	36 cm [14 in]	56 cm [22 in]	81 cm [32 in]	112 cm [44 in]	142 cm [56 in]	203 cm [80 in]	304 cm [120 in]	325 cm [128 in]
<b>SOURCE WIDTH</b>	12.7 cm [5 in]								
<b>SOURCE HEIGHT</b>	7.1 cm [2.79 in]			8.0 cm [3.17 in]			8.5 cm [3.35 in]		
<b>MOUNTING OPTIONS</b>	REMOTE OR FLANGE								
<b>ION CURRENT UNIFORMITY SPECIFICATION</b>	± 2.5% OVER RECOMMENDED SUBSTRATE WIDTH (EFFECTIVE BEAM LENGTH - 4 cm)								
<b>DISCHARGE VOLTAGE RATING</b>	600 TO 4000 VDC								
<b>MEAN BEAM ENERGY</b>	1500 TO 2500 eV								
<b>MAX DISCHARGE CURRENT (COLLIMATED)</b>	≤ 0.63 A	≤ 0.63 A	≤ 0.63 A	≤ 1 A	≤ 1 A	≤ 2 A	≤ 2 A	≤ 2 A	≤ 2 A
<b>TYPICAL BEAM CURRENT</b>	60 TO 80% OF DISCHARGE CURRENT								
<b>MAX DISCHARGE POWER</b>	2.5 kW	2.5 kW	2.5 kW	4 kW	4 kW	8 kW	8 kW	14 kW	14 kW
<b>OPERATING PRESSURE</b>	0.95 TO 1.75 mTORR RECOMMENDED								
<b>TYPICAL GAS FLOW</b>	10-60 sccm	10-100 sccm	10-150 sccm	10-200 sccm	10-250 sccm	10-300 sccm	10-350 sccm	10-450 sccm	10-500 sccm
<b>RECOMMENDED MINIMUM CHAMBER PUMP SPEED</b>	500 LPS	500 LPS	750 LPS	1000 LPS	1250 LPS	1500 LPS	2000 LPS	2000 LPS	2500 LPS
<b>WATER FLOW REQUIREMENTS</b>	≥ 4 LPM [1.0 GPM]		≥ 4.5 LPM [1.2 GPM]	≥ 7.5 LPM [2 GPM]	≥ 12.75 LPM [3.4 GPM]	≥ 15.5 LPM [4.1 GPM]	≥ 19 LPM [5.1 GPM]	≥ 23 LPM [6.1 GPM]	
<b>ESTIMATED PRESSURE DROP</b>	≤ 1.0 BAR [15 PSI]								
<b>MAXIMUM WATER PRESSURE</b>	5.17 BAR [75 PSI]								
<b>MINIMUM WATER INLET TEMPERATURE</b>	ABOVE THE DEW POINT OR 10° C [50° F], WHICHEVER IS GREATER								
<b>MAXIMUM WATER INLET TEMPERATURE</b>	40° C [104° F]								
<b>WATER QUALITY</b>	PH BETWEEN 7 AND 9 TOTAL CHLORINE < 20 PPM TOTAL NITRATE < 1 PPM TOTAL SULFATE < 100 PPM TOTAL DISSOLVED SOLID < 64 PPM TOTAL HARDNESS EXPRESSED AS CALCIUM CARBONATE EQUIVALENT < 250 PPM TOTAL DISSOLVED SOLIDS (TDS) AS ESTIMATED BY TDS ≤ $\frac{640,000}{\text{Specific resistivity } (\Omega \cdot \text{cm})}$								
<b>POWER SUPPLY SPECIFICATION</b>									
<b>MAXIMUM POWER</b>	3 kW			5 kW		10 kW		16 kW	
<b>INPUT VOLTAGE</b>	SINGLE-PHASE, 198-264 V RMS, 48-63 Hz INPUT			THREE-PHASE, 187-242 V RMS, 48 - 63 Hz INPUT					
<b>OUTPUT VOLTAGE</b>	4000 V MAX								
<b>INPUT CURRENT</b>	< 16 A AT 220 V			< 20 A PER PHASE		< 45 A PER PHASE		< 70 A PER PHASE	
<b>SIZE</b>	177mm x 483mm x 508mm (7.0" x 19.0" x 20.0")			266mm x 483mm x 610mm (10.5" x 19.0" x 24.0")		222mm x 483mm x 610mm (8.7" x 19.0" x 24.0")		889mm x 483mm x 610mm (35.0" x 19.0" x 24.0")	
<b>INTERFACES</b>	FRONT PANEL, REMOTE CONTROL VIA TERMINAL BLOCK. OPTIONAL ANALOG SERIAL COMMUNICATIONS ALSO AVAILABLE								

PPALS EXTERNAL ISOLATION COVER



3D VIEW OF PPALS WITH FLANGE MOUNT KIT

