



A300-XP SERIES

UHV Magnetron Sputtering Sources



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GENERAL INFORMATION

The **A300-XP UHV** sputtering sources are the next generation, “expanded performance” version of the industry standard A300 Series magnetron sputtering sources that have dominated the high end, UHV sputter gun market since 1991. New “expanded performance” features include higher pressure operation, improved magnetic material sputtering performance, and a larger product range. Although our competitors have attempted to incorporate certain “AJA innovations” into their product lines during the last 10 years, the new A300-XP source developments will continue to ensure AJA International, Inc.’s position well ahead of the pack in the UHV magnetron market.

The A300-XP Series sources have been designed to meet the most challenging application requirements in today’s thin film deposition markets. Being a manufacturer of custom R&D and small scale production sputtering systems, AJA International, Inc. understands the needs of this market in intimate detail, and can help you solve your process, retrofit, and system design/ configuration issues.



A340-XP Source
4" Target UHV magnetron sputtering source on 8" CF rotatable flange (bolt ring not shown) with chimney, gas ring and pneumatic shutter.



UHV Cluster Flange with (3) A320-XP
fixed sources fitted with flip shutters.

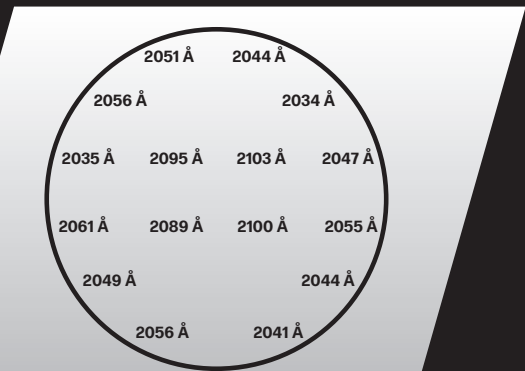
THE UNIQUE MODULAR MAGNET ARRAY

The A300-XP SERIES magnetron sputtering sources feature a unique “modular magnet array” which is completely isolated from the cooling water to eliminate magnet deterioration and subsequent degradation of source performance. This design permits access to the internal magnet arrangement thus allowing the same source to be:

- Configured for **uniform** or **intentionally non-uniform** depositions
- Operated as a **balanced** magnetron
- Configured for **maximum target utilization**
- Configured for **high or low electron energies** as they arrive at the substrate surface
- Operated with **magnetic material** targets and facilitating easy magnetic target removal and replacement
- Operated in a variety of **unbalanced** magnetron configurations
- Configured for **high or low rate** sputtering

“IN-SITU TILT” FOR OPTIMUM UNIFORMITY

For angled sputtering configurations with rotating substrates, A300-XP sources are typically fitted with the “in-situ tilt” option. This option, shown at the right, allows the source angle to be precisely adjusted from outside the vacuum chamber. Fine tuning the incident angle is critical to achieving good deposition uniformity when working distances, operating pressures and materials are changed. While fixed angle arrangements limit and often compromise the capabilities of a system, “in-situ tilt” can deliver better than +/- 2% uniformity on substrates which can be up to triple the diameter of the source targets.



Deposition uniformity with A320-XP (2" target dia.) with in-situ tilt set at 23o, 100 mm working distance, and focused on a rotating, 4.0" diameter, Si wafer. SiO2 deposition shows +/- 1.7% uniformity.

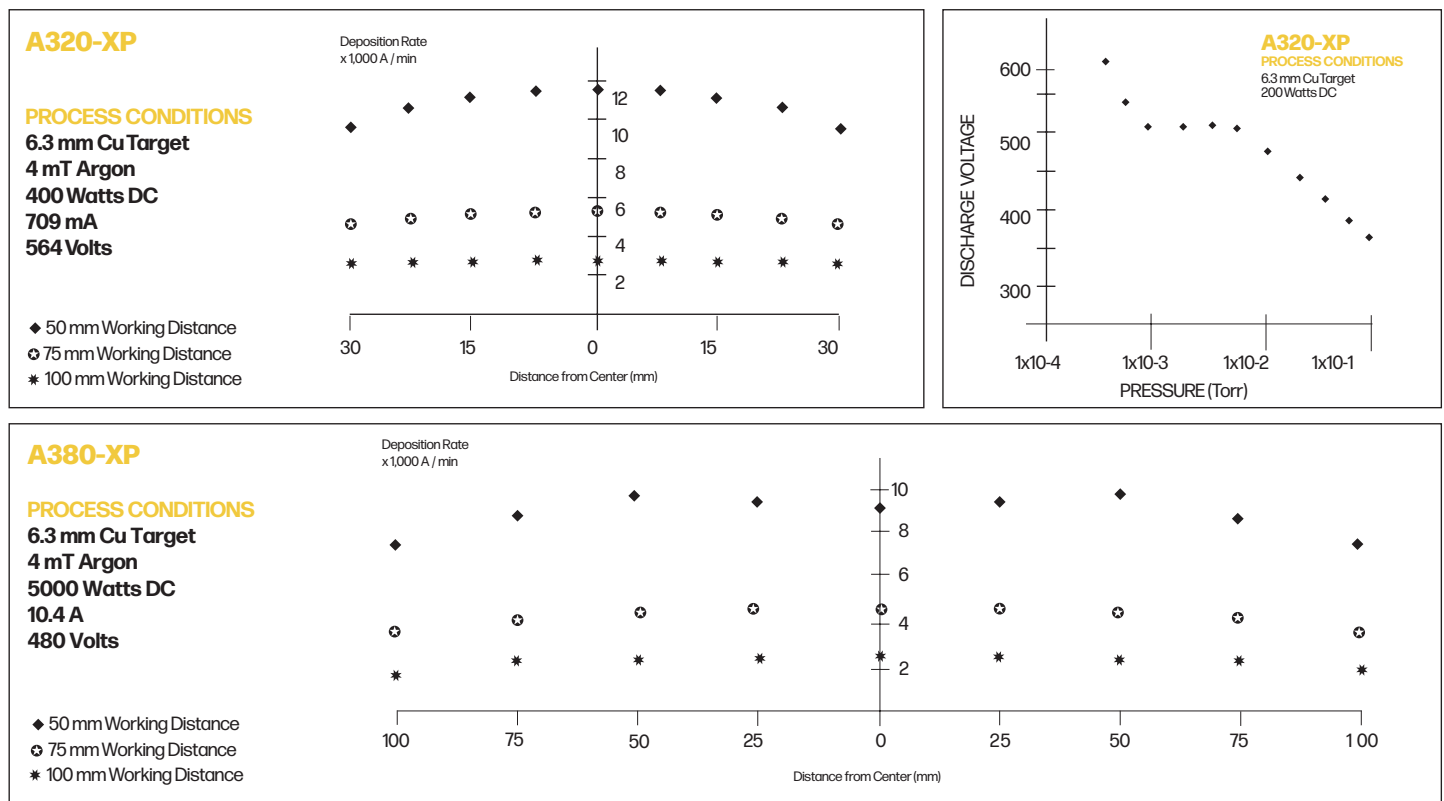
FEATURES

- Modular Magnet Array isolated from cooling water
- Magnetic material sputtering of thicker targets
- Easy removal of larger magnetic targets
- Integral gas injection and chimney system
- Efficient target cooling with no vacuum/water seals
- Clamped target mounting for optimal heat transfer
- RF & DC Compatibility
- True UHV Construction (CF & ceramic/metal only)
- Bakeable to 200° C without disassembly
- Broad operating pressure (0.4 to 1.0 Torr)
- In-situ tilt or manual tilt for optimum uniformity
- Custom versions available
- Source/Power Supply/Target packages available

TYPICAL APPLICATIONS

- CD / DVD Disk Coatings (e.g. reflective, phase change)
- Semiconductor
- Conductive Metal / Resistive Metal / Insulating Films
- Transparent Electrical Conductors (e.g. ITO)
- Optical Communications Applications (e.g. pump lasers)
- Lens Coatings (reflective / anti-reflective / hard / color)
- Precious Metals (for maximum target utilization)
- Thin Film Sensors
- Coatings for Surgical / Medical Implements & Implants
- Magnetic Storage Media and Heads (HD, GMR , TMR)
- Photovoltaic Thin Films (solar cells)
- Wear Resistant Films

TYPICAL PERFORMANCE



POWER SUPPLIES

Power supply packages include a full cable set and are pre-configured for trouble free start-up.



	POWER	MODEL
DC Power Supplies	750 watt	DCX-750
	1500 watt	DCX-1500
RF Power Supplies	100 watt	A100-MU
	300 watt	A300-MU
	600 watt	A600-MU
Pulse DC Power Supplies	1500 watt	DCXP-1500
HiPIMS	100 A/1000 V	HiPSTER 1
	600 A/1000 V	HiPSTER 6

SPECIFICATIONS & DIMENSIONS

* Sources configured for 0.250" (6.3 mm) thick targets unless specified in order

MODEL NUMBER	A310	A315	A320
TARGET DIAMETER / MAXIMUM THICKNESS [in (mm)]	1.0" / 0.125" (25.4 / 3.2)	1.5" / 0.125" (38.1 / 3.2)	2.0" / 0.375"* (50.8 / 9.5*)
MAXIMUM POWER - DC / RF (WATTS)	150 / 150	400 / 300	700 / 500
COOLING WATER (liters / minute)	0.5	1.2	1.7
SOURCE HEAD DIAMETER (D) [in (mm)]	1.33" (33.8)	2.35" (59.7)	3.50" (88.9)
SOURCE HEAD HEIGHT (H) [in (mm)]	2.00" (50.8)	4.70" (119.4)	4.80" (121.9)
MODEL NUMBER	A330	A340	A360
TARGET DIAMETER / MAXIMUM THICKNESS [in (mm)]	3.0" / 0.375"* (76.2 / 9.5*)	4.0" / 0.375"* (101.6 / 9.5)	6.0" / 0.375" (152.4 / 9.5)
MAXIMUM POWER - DC / RF (WATTS)	1200 / 800	1500 / 1000	2500 / 1500
COOLING WATER (liters / minute)	2.3	3.0	5.0
SOURCE HEAD DIAMETER (D) [in (mm)]	4.63" (117.6)	5.63" (143.0)	7.70" (195.6)
SOURCE HEAD HEIGHT (H) [in (mm)]	4.80" (121.9)	4.80" (121.9)	6.00" (152.4)

SOURCE HEAD CONFIGURATIONS

- MM (Magnetic Material)
- S (Non-Standard Special)
- HP (High Pressure)

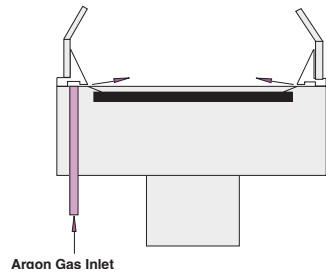
TYPICAL MOUNTING OPTIONS (Custom designs available)

- A (Axial)
- R (Right Angle)
- LP (Low Profile)

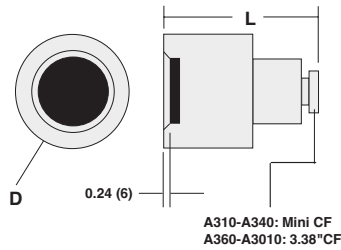
POPULAR OPTIONS

- Tilt gimbals / in-situ tilt
- Source shutters
- Gas injection ring with chimney
- Clamping ring adapters

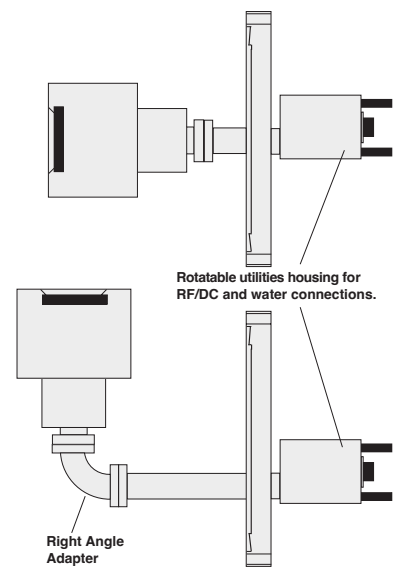
GAS INJECTION RING & SHIELDING CHIMNEY



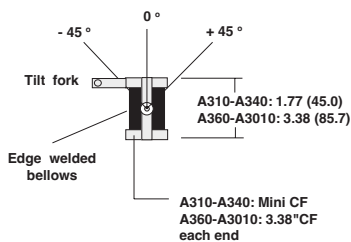
A300-XP SERIES SOURCE HEAD



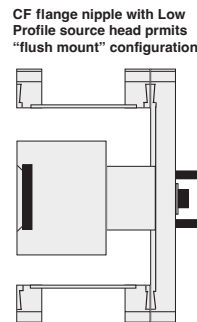
AXIAL & RIGHT ANGLE CF FLANGE MOUNTING



TILT GIMBALS



PORT EXTENSION WITH LOW PROFILE SOURCE HEAD



For questions, quotes and ordering information please contact us directly:



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