Facilitating Process Innovation for Tomorrow’s Advanced Applications

The Ascent DMS series offers unprecedented power delivery ease and control for dual-magnetron sputtering, enabling precise tuning of film characteristics. With selectable frequency, regulation mode, and duty cycle, as well as low stored energy and simplified, modular system configuration, the Ascent DMS accessory distinguishes itself as truly next-generation technology. Cost-effective, scalable, and versatile, it minimizes complexity, increases quality, and boosts throughput to enable advanced process innovation.
Product Highlights

- For all dual-magnetron sputtering applications
- Increased film value: repeatable, customizable deposited films
- Lower cost of ownership and increased productivity
- Lower upfront costs
- Higher power levels with reduced arc damage
- Easy scalability, integration, and support

- Modular and scalable (40, 60, and 120 kW units configurable up to 240 kW)
- Selectable frequency (500 Hz to 50 kHz)
- Power, current, or voltage regulation
- Adjustable duty cycle — independent power ratio regulation for each magnetron
- Pulsed-DC and bipolar Pulsed-DC operation
- Lowest arc energy possible from any industrial dual-magnetron sputtering supply
- CEX (phase synchronization)
- EU ROHS compliant
Increased Film Value: Repeatable, Customizable Deposited Films

Create the ideal film density, uniformity, transmission, and resistivity for your application by selecting frequency (500 Hz to 50 kHz), regulation method (voltage, current, or power), and duty cycle (5 to 95%).

Fixed-frequency output stabilizes process conditions by eliminating resonant frequency changes, resulting in excellent repeatability. Low stored energy reduces arc-caused process contamination and film defects.

Precise tuning of film characteristics for advanced, narrow-margin applications
**Easy, Custom Installation Options**

Modular and scalable, Ascent DMS accessories enable customized installations from 40 to 240 kW, and provide DC and pulsed-DC outputs from the same industry-standard 19" rack.

**Lower Cost Ownership and Increased Productivity**

The ability to individually control each magnetron increases target-erosion uniformity, while fixed-frequency output reduces arc energy and target nodule formation. These factors significantly reduce maintenance frequency and lengthen productive manufacturing time. They also decrease the cost of consumables by allowing target utilization of 85% or more.

**Lower Upfront Costs**

With the ability to control power proportionally to each cathode, Ascent DMS configurations eliminate the need to use multiple power supply types, replacing separate AC, DC, and pulsed-DC units. This significantly reduces equipment, inventory, and training costs, and eases maintenance and support.

**Higher Power Levels with Reduced Arc Damage**

Low arc energy and excellent arc management enable Ascent DMS configurations to achieve higher power levels without compromising film or process quality. While AC designs typically store 6 mJ/kW, Ascent DMS units store less than 1.0 mJ/kW, enabling successful deposition of even the most arc-prone materials, such as AZO, IGZO, IZO, ITO, and SiO₂.

**Independent Power Regulation to Each Cathode**

Ascent DMS units control the sputter rate of each cathode individually. This enables more uniform target wear and sputtering in multi-cathode, single chamber systems, compared to AC supplies with fixed 50/50 duty cycles.
Easy Scalability, Integration, and Support

Ascent DMS units are modular and scalable, delivering 40 to 240 kW in increments of 30, 40, and 60 kW. CEX (phase synch) technology easily synchronizes multi-cathode systems and allows cathodes to be placed closer together for better uniformity. This versatile series suits a mix of cathode types and allows co-sputtering of controlled mixtures of materials. Reduced configuration complexity also eases maintenance and support.

Specifications

<table>
<thead>
<tr>
<th></th>
<th>Ascent DMS 40 kW</th>
<th>Ascent DMS 60 kW</th>
<th>Ascent DMS 120 kW</th>
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</thead>
<tbody>
<tr>
<td><strong>Input Power</strong></td>
<td>85 to 264 VAC, single</td>
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<tr>
<td><strong>Output Voltage</strong></td>
<td>Up to 1000 V</td>
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<tr>
<td><strong>Output Current</strong></td>
<td>Up to 150 A</td>
<td>Up to 300 A</td>
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<tr>
<td><strong>Min Output Current</strong></td>
<td>1 A at 400 W</td>
<td>2 A at 600 W</td>
<td>2 A at 600 W</td>
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<tr>
<td><strong>I/O Communication</strong></td>
<td>Ethernet, EtherCAT®, Profibus®, RS-232/485, analog, Virtual Front Panel (VFP) software, remote control panel, and passive-display front panel</td>
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<tr>
<td><strong>Weight</strong></td>
<td>~61.5 kg (136 lb)</td>
<td>98.88 kg (215 lb)</td>
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<tr>
<td><strong>Mounting</strong></td>
<td>48.26 cm (19&quot;) rack mountable, 6U height</td>
<td>48.26 cm (19&quot;) rack mountable, 10U height</td>
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<tr>
<td><strong>Cooling Air Temperature</strong></td>
<td>40°C (104°F) max</td>
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<tr>
<td><strong>Cooling Water Temperature</strong></td>
<td>35°C (95°F) max</td>
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<tr>
<td><strong>Compliance</strong></td>
<td>EU RoHS, CE, NRTL</td>
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1Ascent power supply input power: 400, 440, or 480 VAC ±10%, 50/60 Hz
ASCENT® DMS
Advanced Dual-Magnetron Sputtering Accessories
ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

PRECISION | POWER | PERFORMANCE | TRUST