



Ascent® DC Power
Supplies with Arc
Management™
Technology

Benefits

Ensures maximum field reliability

Effectively manages arcs for improved film quality, productivity, throughput, and yield

Simplifies power supply integration in sputtering processes

- Solar
- FPD
- Industrial coatings
- Web coatings

Features

30, 40, and 60 kW models

Patented and patent-pending Arc Management™ technology

Set Point Compensation™ technology

VFP software

Remote front panel & passive front panel

DeviceNet®, RS-232/485, Ethernet, Profibus, and analog communication interfaces

Master/slave capability up to 12 units

24 x 7 x 365 technical support

RoHS compliant

Designed specifically to manage arc-sensitive processes, the robust Ascent® DC power supply delivers stable power for high-quality, repeatable films. Rigorous qualification programs ensure maximum reliability. Effective Arc Management™ capabilities quench arcs and prevent unnecessary film damage or process interruptions, while Set Point Compensation™ technology balances set point and sputter rate, even in intensely heavy arcing conditions. Easy to set up and operate, the Ascent power supply is equipped with multiple user interfaces and Virtual Front Panel software. You may elect to master/slave several units or take advantage of Arc-Sync™ technology to coordinate power supplies in multiple, adjacent cathodes. No matter what your configuration, you can rely on stable, repeatable process power with the Ascent power supply.

In magnetron PVD processes, including large-area sputtering, for solar, FPD, industrial, and web coating applications, insulative target materials can produce hundreds or even thousands of arcs per second—damaging the substrate and the target, jeopardizing productivity and yield. The Ascent® DC power supply, designed with arc-sensitive processes in mind, manages arcs with sophistication like never before. Regardless of process materials or cathode designs, stable power delivery allows equipment and process engineers alike to produce and maintain high-quality, repeatable films.

Common Process Materials

Al	Mo	Ti
Ag	NiV	ZAO
ITO	SnO	Others

Ensures Maximum Field Reliability

Based on three decades of experience in DC power and sputtering applications, the architecturally advanced Ascent power design incorporates only the most refined engineering, manufacturing, test, and technical support. Our rigorous manufacturing protocol includes qualification programs and ongoing reliability requirements that ensure maximum field reliability. The Ascent power supply was designed to—and successfully passed—a series of high-reliability measures that include:

- MTBF >150,000 hours
- High-temperature burn in
- Thermal and electrical stress testing
- HALT/HASS
- Firmware reliability
- Worst-case analyses

Our extended testing translates to more robust product performance, which allows customers to maintain the highest process throughput. High reliability is especially critical for static TFT deposition applications where a single power supply failure can shut down a cathode and cause significant downtime for the entire chamber.

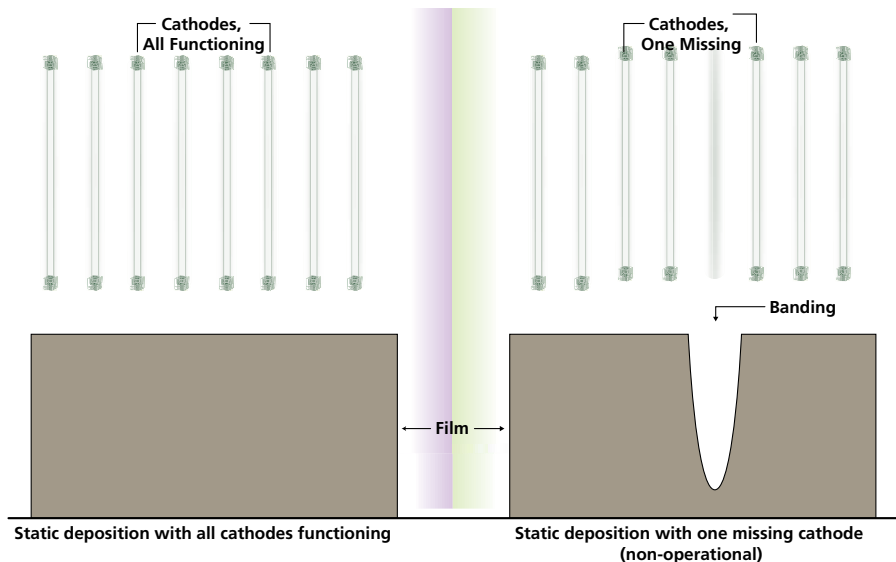


Figure 1. Cathode failure, for example in a static deposition process, can cause extreme banding and significant downtime. High reliability in the Ascent® power supply ensures high throughput.

Effectively Manages Arcs for Increased Film Quality, Productivity, and Yield

Macro-particle formation is one of the most damaging by-products of any arc event. Effective arc management is imperative, and the Ascent power supply's progressive Arc Management™ capabilities prevent unnecessary film damage or process interruptions through fast shut down, minimum off-time, and a controlled power recovery. After a shut down following arc detection, the unit:

- Stores <1 mJ per 1 kW of output energy
- Rapidly extinguishes the arc
- Ramps energy to avoid overshoot and secondary arcs that power supplies with poor recovery cause

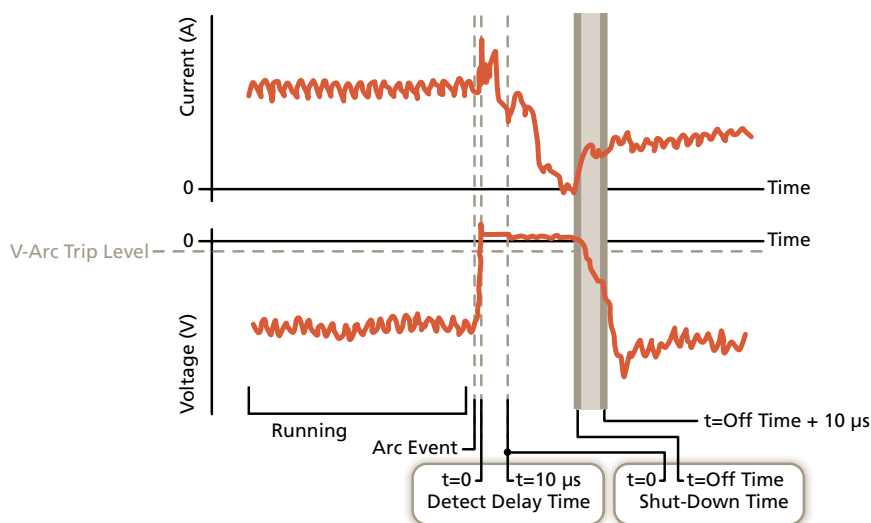


Figure 2. Given identical processes, materials, and chamber conditions, the Ascent® power supply stores extremely low energy and ramps power to eliminate power-supply-induced recurrence of arc events.

Arc Management™ Technology

AE's patented and patent-pending Arc Management™ solution takes a multi-level approach for custom management of the arc-handling response. As the rate and severity of arcs change throughout the process and throughout the target lifetime, our progressive Arc Management technique handles arcs more effectively than a single-setting solution. Initially, the Ascent power supply provides a short, primary response to an arc. If the shut-down time in the primary response is insufficient to cool the surface or arc location and an immediate arc follows, the secondary response sets in. If the plasma remains unstable, a persistent response or a short-circuit response is activated until the plasma stabilizes.

Set Point Compensation™ Technology

AE's Set Point Compensation™ technology enables our power supplies to both extinguish arcs and compensate for any decrease in sputter rate. Set Point Compensation automatically adjusts the Ascent power supply's output based on its arc response level. This ensures the same deposition rate at the beginning and end of target life—so you can maintain your deposition rate, line speed, and throughput.

Simplifies Power Supply Integration in Sputtering Processes for Solar, FPD, Industrial, and Web Coating Applications

The Ascent power supply is easy to set up and operate. Simply apply the standard settings—optimized for managing the plasma—or fine-tune parameters using Virtual Front Panel (VFP) software or remote front panel controls.

Virtual Front Panel (VFP) Software

Multiple user interfaces allow for easy integration with your system's PLC. However, for development, testing, monitoring, and full-control set up of your power supply, AE's Virtual Front Panel software offers a powerful package. Quickly and easily customize system parameters with user-friendly menus and tabs. Once final settings are established, you can depend on continuous, worry-free power delivery.



Figure 3. VFP software enables you to monitor and control the Ascent® power supply using a personal computer.

Master/Slave & Arc-Sync™ Compatible

You can master/slave up to 12 Ascent power supplies for combined power up to 480 kW. For use in multiple, adjacent cathodes, Arc-Sync™ technology coordinates all of the power supplies and triggers a simultaneous response to extinguish the arc—minimizing the possibility of substrate arcing, substrate and target damage, and equipment damage.

Pulsar™ Pulsing Accessory

The Ascent power supply can be paired with the Pulsar™ pulsing accessory for uni-polar pulsing up to 20 kHz.

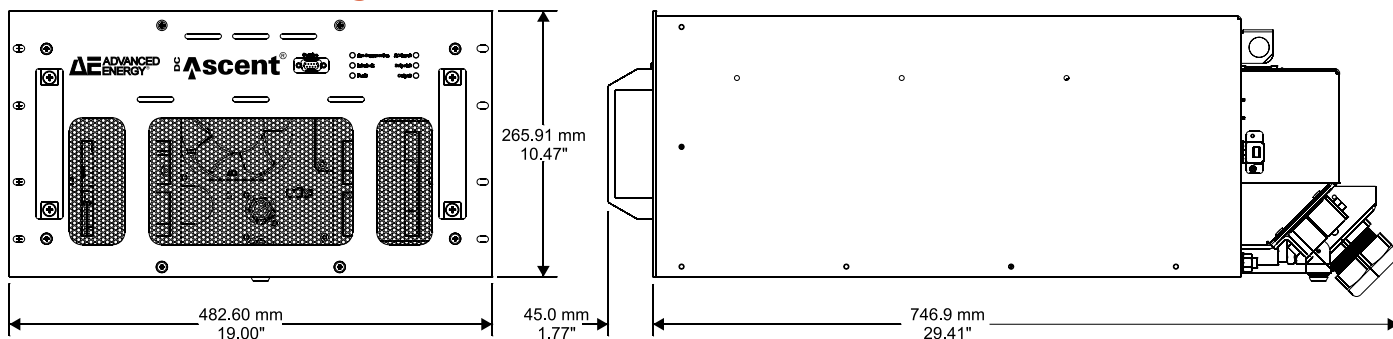
Summary Specifications

Physical	30 kW	40 kW	60 kW
Size	26.67 cm (H) x 43.18 cm (W) x 58.423 cm (D)		
	10.50" (H) x 17.00" (W) x 23.00" (D)		
Weight	~61.5 kg (136 lb)		
Mounting	48.26 cm (19"), rack mountable, 6U height		
Connectors			
AC Input Power	Ring lugs, 10 mm		
Output Power	Ring lugs, 10 mm		
Analog Port	15 V, 37-pin subminiature-D female, isolated		
Interlock Port	9-pin, male, subminiature-D		
RS-232/485 Serial Port	9-pin, female, subminiature-D		
Service Serial Port (on front panel of unit)	9-pin, female, subminiature-D		
Ethernet Port	RJ45 connector		
PROFIBUS Port	9-pin female, shielded, subminiature-D connector		
Remote Active Panel (Remote Port)	9-pin male, subminiature-D		
Cooling Water (Rear Panel)	Brass female 1/2" NPT		
Master-Slave/Arc-Sync™ (M/S Link Ports)	RJ-45		

Electrical	30 kW	40 kW	60 kW
Input			
Voltage	400 VAC ± 10% (360 VAC to 440 VAC)		
Cable Type	3 ϕ , 4 wire		
Line Frequency	50/60 Hz		
Current	80 A	80 A	115 A
Output			
Power	30 kW	40 kW	60 kW
Power Factor	> 0.90 (0.93 typical)		
Ignition Voltage	From 800 V to 1200 V		
Output Voltage	400 VDC to 800 VDC tap range		429 VDC to 700 VDC tap range
Minimum Output Voltage	30 V at 400 W		30 V at 600 W
Maximum Output Current	100 A		140 A
Minimum Output Current	1 A at 400 W		2 A at 600 W
Open-Circuit Voltage	1200 V at 60 mA		

Environmental	30 kW	40 kW	60 kW
RoHS	RoHS compliant		
Operating Temperature	5°C to +40°C (+41°F to +104°F)		
Storage Temperature	-25°C to +55°C (-13°F to +131°F)		
Transportation Temperature	-25°C to +70°C (-13°F to +158°F)		
Relative Operating Humidity	5% to 85%		
	+1 g/m³ to +25 g/m³		
Atmospheric Pressure	78.8 kPa to 106 kPa (788 mbar to 1060 mbar)		
	Equivalent altitude: 2000 m to -500 m (6562 to -1640)		
Cooling Requirements			
Cooling Air Temperature	40°C (104°F)		
Cooling Water Temperature	35°C (95°F)		
Minimum Water Flow	~7.6 lpm (2.0 gpm)		~15.2 gpm (4.0 lpm)
Pressure	≤ 7.1 bar (96 psi) above atmospheric pressure		
	Minimum differential pressure is 1.93 bar (28 psi) input to output		
Water Resistivity	Specific resistivity at 25°C is > 3.3 kΩ x cm and < 100 kΩ x cm		
Water pH	Between 7 and 9		

Dimensional Drawing



Contact AE

Eliminate common film quality obstacles such as pinholes, cracking, and crazing. You can expect stable, repeatable process power using the robust Ascent power supply with Arc Management™ technology—for improved film quality, productivity, throughput, and yield. Contact us today at +1.970.221.0108 or visit us online at www.advanced-energy.com/en/sales_support.html.

For more information on Ascent power supply, visit:
www.advanced-energy.com/en/Ascent.html

To view AE's comprehensive power systems portfolio, visit:
www.advanced-energy.com/en/Power_Systems.html

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Specifications are subject to change without notice.



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