

# ASCENT<sup>®</sup> AP (ADVANCED PULSING) POWER SUPPLIES

FLEXIBILITY AND CONTROL FOR SINGLE- AND  
DUAL-MAGNETRON SPUTTERING | 10 TO 30 KW | 25 TO 75 A





# Flexibility and control for single- and dual- magnetron sputtering



# Ascent® AP (Advanced Pulsing) Power Supplies

Building on AE®'s premier bipolar pulsed-DC technology, Ascent® AP power supplies extend your ability to optimize output with advanced pulse shaping, as well as four-block progressive arc management that includes full voltage reversal and self-adjusting arc parameters. The compact Ascent AP solution's patented pulsing technology proactively inhibits arcs, while its wide operational range unlocks a range of material options to extend single- and dual-magnetron process flexibility and material innovation.

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## Benefits

- Higher power levels with reduced arc damage
- Expanded process control, flexibility, and innovation
- Precise sputtering of dielectric and conductive films
- Easy integration and control

## Applications

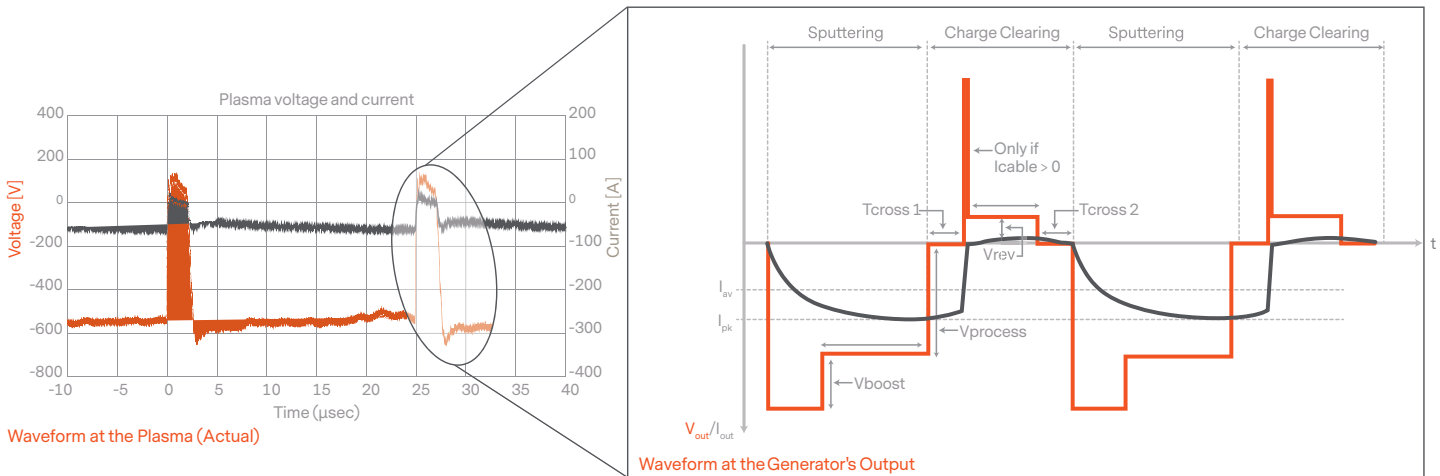
- Semiconductor
- Advanced package manufacturing
- Glass coating
- Flat-panel display and optoelectronics
- Photovoltaics and thin-film battery
- Mobile decorative, optics, and photonics
- Industrial coatings

## Features

- **Ascent Arc Management**  
Progressive arc-handling blocks maintain plasma through arc events while increasing process control and lowering arc energy
- **SOA and Frequency Range**  
Operates up to 1200 V and 75 A with frequencies from 5 to 150 kHz
- **Ascent Communications**  
Offers the latest digital communication options while bringing forward legacy communications to provide ease of integration with the latest tools and backwards compatibility with legacy tools
- **Ascent Sync**  
Capable of pulse and arc synchronization with AE's Ascent pulsed-DC and RF products
- **Ascent AP Waveform Controls**  
Configurable waveform with adjustable reverse voltage, boost voltage, and dead times
- **PowerInsight by Advanced Energy™**  
Optional IoT data visualization platform for process characterization and optimization
- **Set Point Compensation™ Technology**  
For stable throughput
- **Wide Operational Range**  
Enables a variety of process materials

## Single-Magnetron Sputtering of Reactive and Conductive Materials

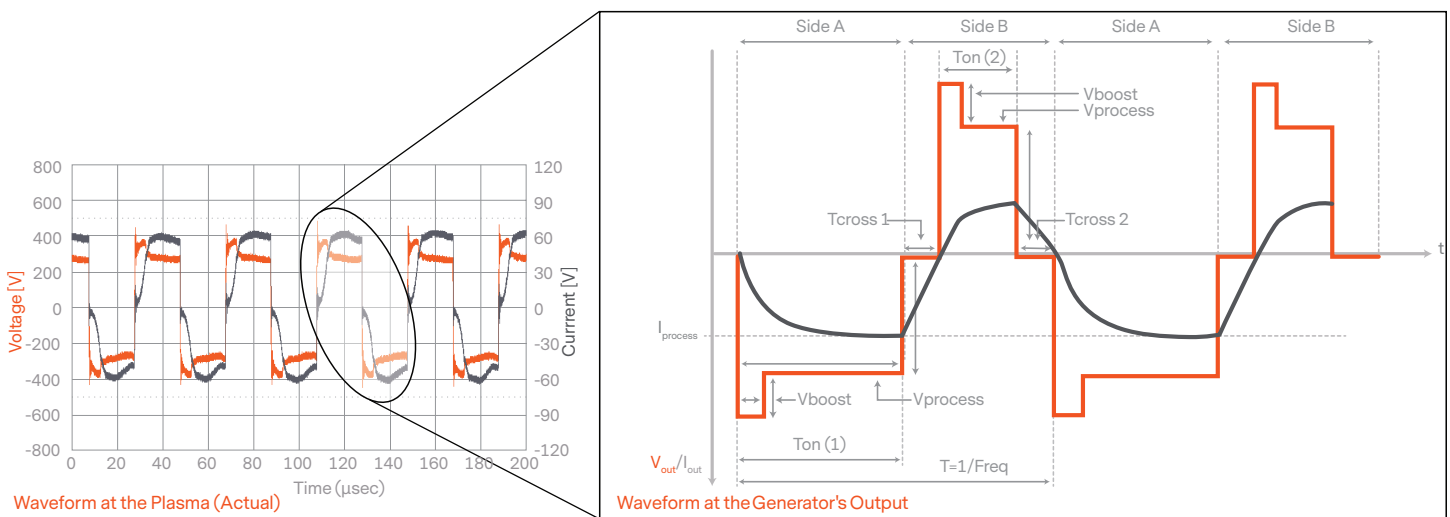
Use as a single-magnetron sputtering supply or as a bias supply.



A patented boost circuit on the leading edge of the sputtering waveform accelerates delivery of power to the process compared to a sine wave generator. The reverse portion of the waveform maximizes control, allowing more definitive charge clearing during the reverse cycle.

## Dual-Magnetron Sputtering of Reactive Materials and “Bi-Material Co-Sputtering”

Control power delivery to each magnetron independently for increased deposition rates and target utilization.



## Optional PowerInsight by Advanced Energy™ Data Visualization Software

### Built-in Module

Direct LAN Ad-hoc Connectivity or Fab Network LAN Connectivity via LAN/Ethernet Port.

### Real-Time Dashboard

Monitors power-delivery variables and indicates faults/warnings using the onboard web application.

### Flight Recorder

View historical performance (evolution), review events and process steps (pan, scan, zoom), and store up to three months of data (longer with down sampling).

### Support Tool

Enable remote troubleshooting by uploading to the PowerInsight Cloud and downloading data to be explored manually (human readable).

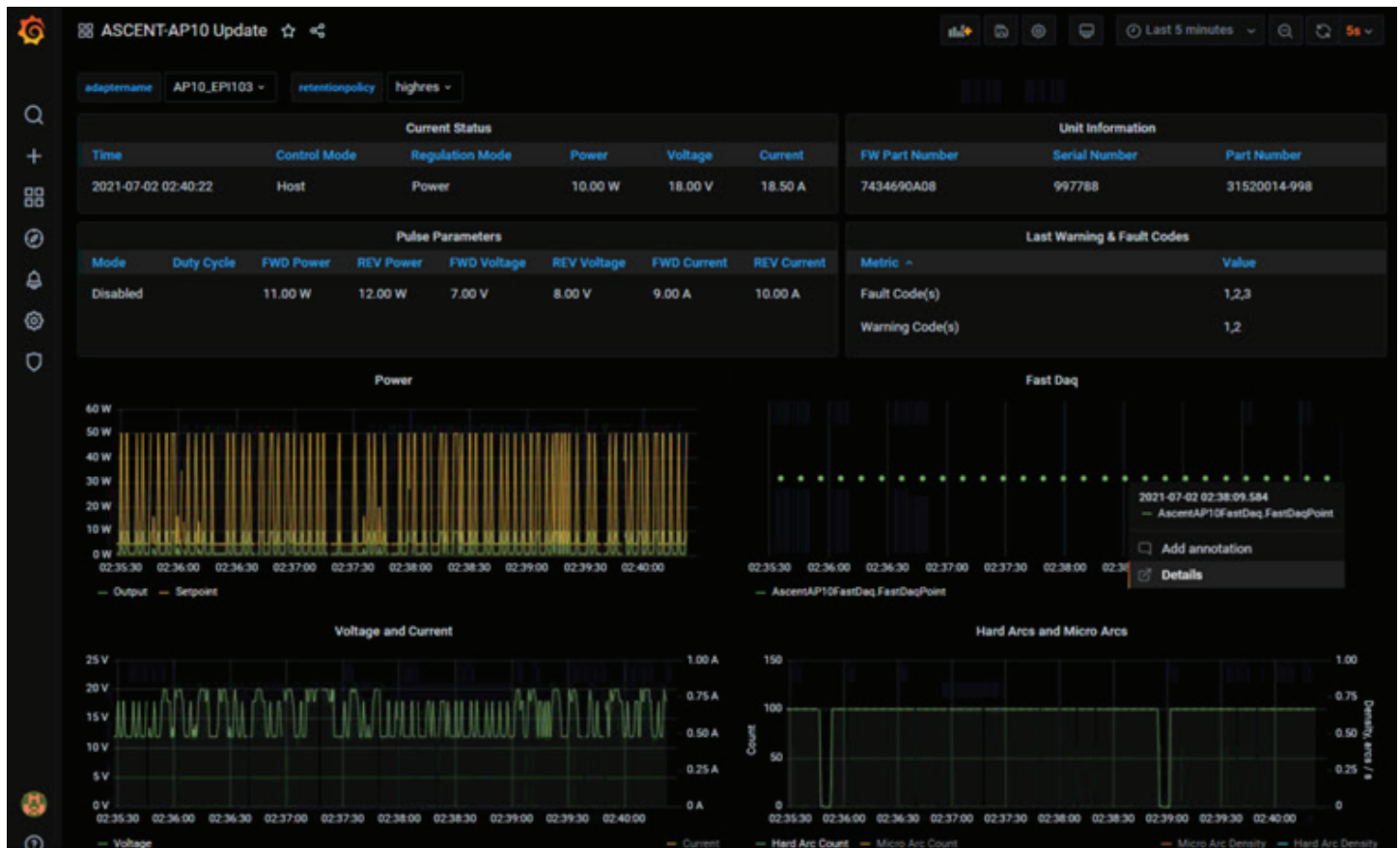
### Collaboration Tool

Develop additional analytics and identify improvements to the process and product.

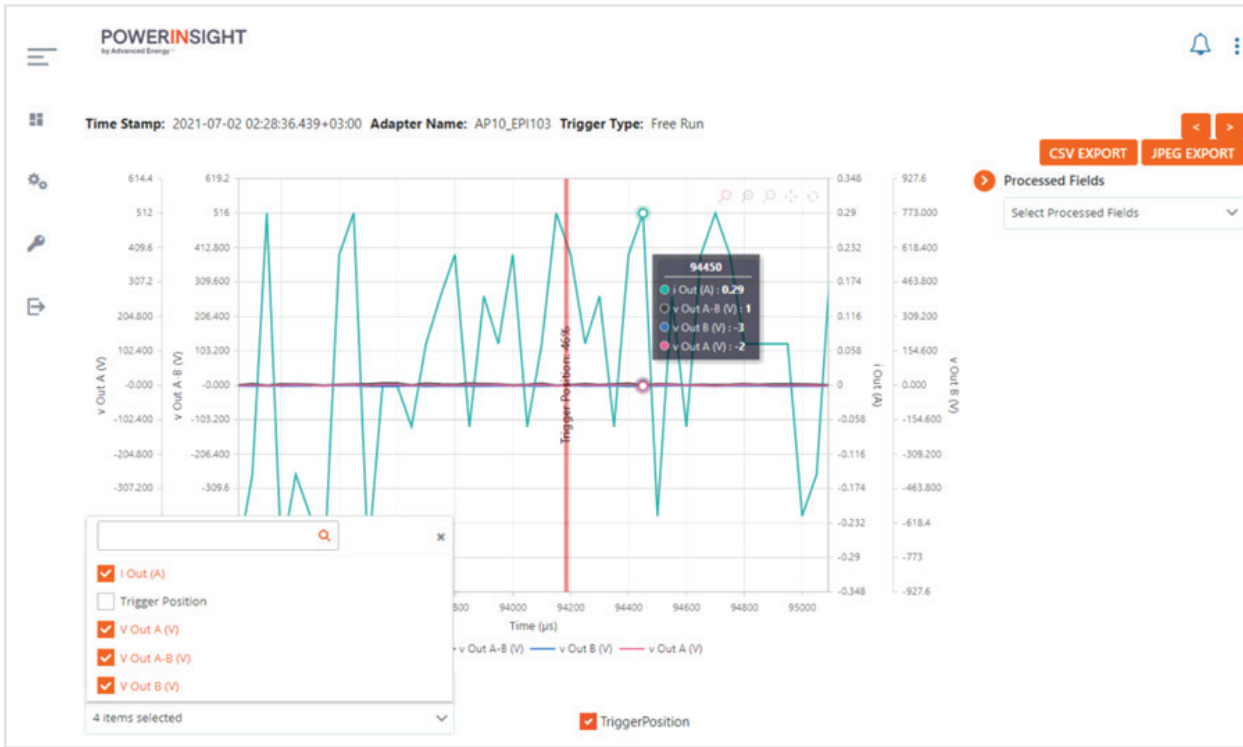
### FastDAQ Visualizer and Recorder

Capture, store, and review triggered events using configurable navigation tools (fields, zoom, etc.).

## PowerInsight by Advanced Energy™ Dashboard



## FastDAQ Event Capture



## Product Specifications

Ascent AP Power Supply			
Electrical Specifications	Ascent SMS AP Power Supply	Ascent DMS AP Power Supply	Ascent SMS/DMS Power Supply
Power	10 to 30 kW	15 to 30 kW	15 to 30 kW
Voltage	1000 VDC	1000 VDC	1000 VDC (1200 V ignition)
Peak Current	33 to 100 A	50 to 100 A	50 to 100 A
Average Current	25 to 75 A	40 to 80 A	Dependent on operating mode
Frequency	5 to 150 kHz	5 to 150 kHz	5 to 150 kHz
Reverse Time (Max)	15 µsec	N/A	Dependent on operating mode
Duty Cycle	> 60% ON time	5 to 95%	Dependent on operating mode
Reverse Voltage	300 VDC max	N/A	Dependent on operating mode
Pulse Configuration	Unipolar	Bipolar	Dependent on operating mode

# Mechanical Specifications

Ascent AP Power Supply		
Mechanical Specifications	10 kW Models	15 kW and 30 kW Models
Height	17.25 cm (6.79")	26.1 cm (10.3")
Width	48.26 cm (19.00")	48.3 cm (19")
Depth (Without Connections)	59.27cm (23.3")	63.3 cm (24.9")



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## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than four 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

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