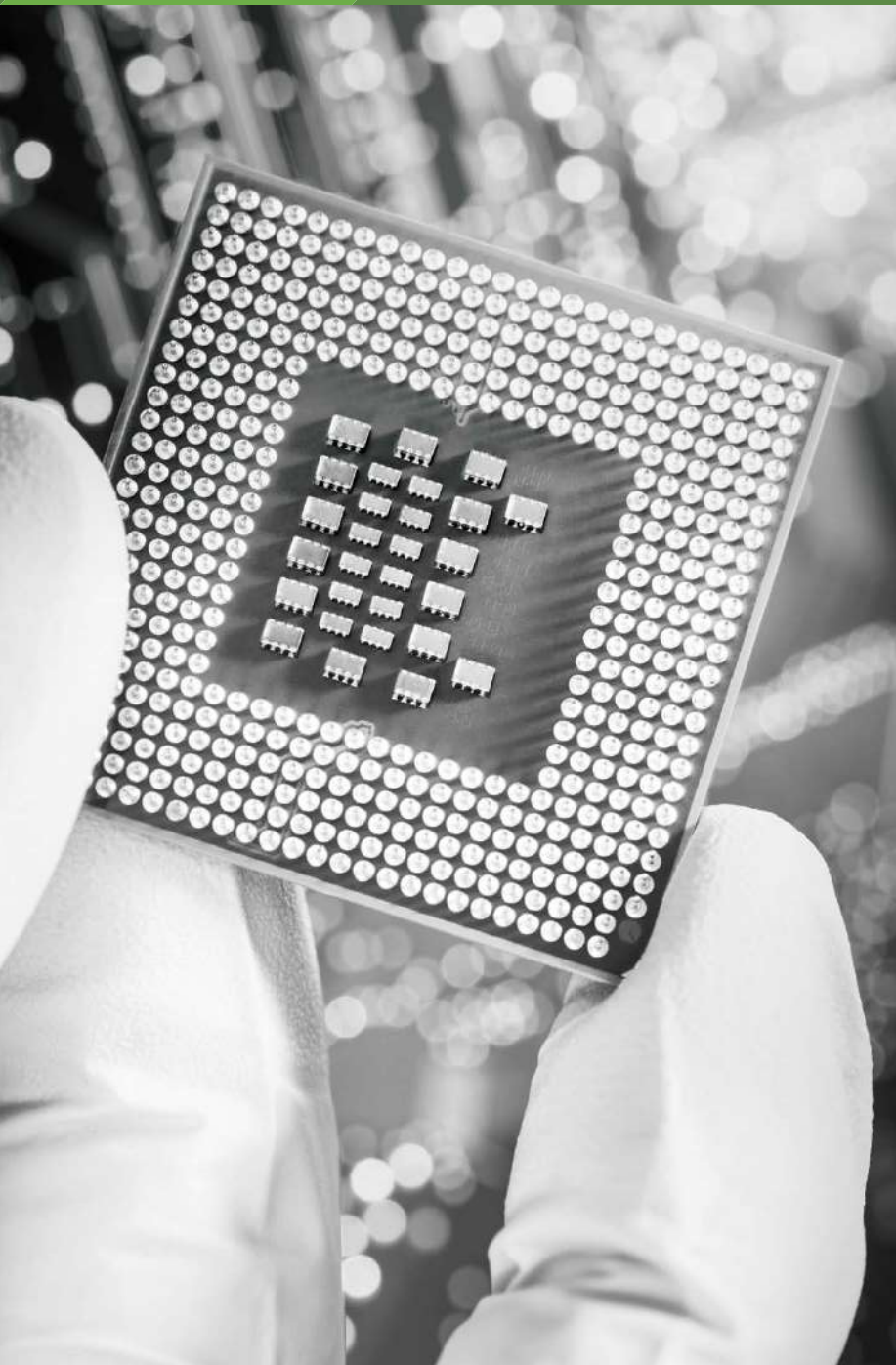


# CESAR RF POWER SUPPLIES

ROBUST RF POWER SUPPLIES FOR DEPENDABLE PERFORMANCE  
IN DEMANDING PLASMA APPLICATIONS



## Output Frequency

---

2, 4, 13.56, 27.12, 40.68 MHz

## Power Output

---

300 W to 5 kW

## Input Voltage

---

200 and 400 VAC



## Cesar RF Power Supplies

The robust and versatile Cesar® platform offers exceptionally consistent RF power-delivery performance, as well as a diverse selection of models, each with a unique set of features and capabilities (2, 4, 13.56, 27.12, and 40.68 MHz; 0.3 to 5 kW; with a variety of user interfaces and input options). This enables you to choose a unit suited specifically to your application — without lengthy custom-generator lead times.

High-quality components and a low part count maximize reliability and product lifetime, making the most of your investment — and your process productivity. A comprehensive, yet highly intuitive operating menu, accessible on the unit's active front panel and displayed on a large LCD, provides unparalleled ease — increasing operator efficiency and minimizing training costs.

The economical Cesar RF power supply platform includes a wide variety of models, each with a comprehensive and unique feature set, to suit most any demanding plasma-based application.

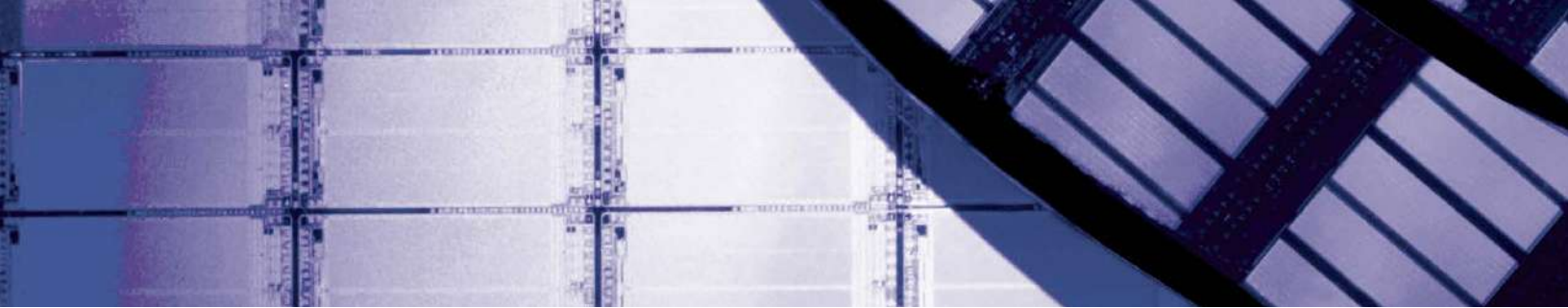
### Product Highlights

- Increased process uptime
- Enhanced operational ease and flexibility
- Customized performance without custom-unit lead times
- Long-term ease of use and cost savings
- World-class service and support
- Compact, streamlined design
- Standard platform packaging
- High efficiency — less heat generated
- Two analog user port options
- SEMI™ compliance (meets or exceeds standards)

### Typical Application

Cesar RF power supplies offer customized performance for most any plasma-based application, including:

- HDP-CVD
- PECVD
- Etch — ICP/RIE
- PVD
- Plasma cleaning



## Multiple Options

(Feature Set Varies According to Model)

- Power Output (Models from 0.3 to 5 kW)
- Analog I/O Type (25 and 15 Pin)
- Output Frequency (2, 4, 13.56, 27.12, and 40.68 MHz models)
- Serial I/O Type (RS-232, Ethernet, or Profibus)
- Input Voltage (200 and 400 VAC)

## Standard Features

(All Models)

- CEX (Phase Synchronization) Mode
- Compact, Rack-Mountable Package
- Multiple Protection Features
- Active Front Panel
- Advanced Operating Men

## Increased Process Uptime, High Product Reliability

The Cesar RF power supply's robust, streamlined design is built from the highest-quality parts available and uses fewer components than competing products. This minimizes the chance of malfunction, wear, or breakage, even under the harsh conditions of plasma processing. Its highly efficient class E switchmode design also generates less heat, reducing temperature stress on critical components.

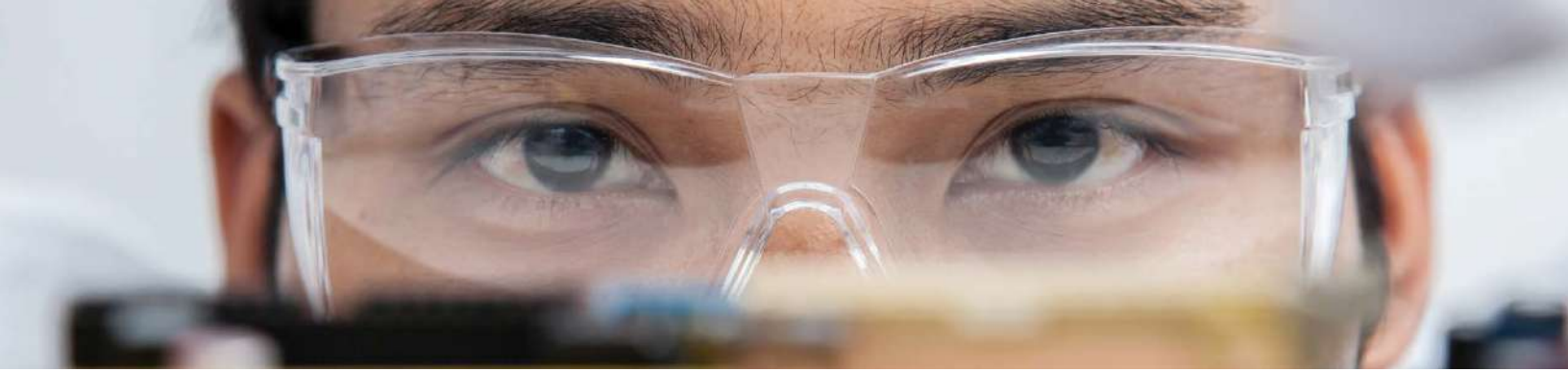
## Dependable Performance

Designed to maintain a tight performance under even the most demanding conditions, the Cesar RF power supply handles high load mismatches, remaining fully functional at rated reflected power (pre-set between 20 and 40%, depending on model).

## Enhanced Operational Ease and Flexibility

Accessible through the unit's active front panel, the Cesar power supply's unique operating menu provides a high degree of insight into and control over power supply operation. With unmatched monitoring and control capabilities, this menu increases ease and operational flexibility, enabling you to perform crucial functions at the source, as well as gather data to enable process optimization. Key menu items include:

- Power mode (forward power, DC bias, delivered power)
- VM match performance display and control (manual)
- Plasma recipes (programmable — variable rise/fall times, power ramping, etc.)
- Reflected power performance
- Device configuration



### **Customized Performance Without Custom-Unit Lead Times**

To suit your unique system configuration, Cesar RF power supplies feature two analog and three digital interface options for a total of six possible configurations. Their modular design enables us to meet your specifications — without the usual custom-unit lead times.

### **Long-Term Ease of Use and Cost Savings**

You'll immediately benefit from your Cesar unit's straightforward installation and operation. However, these benefits extend far beyond your first purchase of a Cesar RF power supply.

### **Standard, Interchangeable Package Design**

As processes develop, the Cesar platform offers a wide selection of RF power-delivery solutions to suit most any application. Plus, standard platform packaging makes it extremely easy and inexpensive to replace one Cesar unit with another when your power requirements change. This also simplifies design and setup for large systems with multiple RF power supplies.

### **Reduced Training Costs**

Competing RF power platforms may not offer the features and performance you need when your power requirements change. However, the Cesar product line features a remarkable variety of models, which means that you're likely to find a suitable new product within the Cesar platform. This eliminates the need for additional training.

### **Rugged, Economical Design**

These rugged power supplies provide dependable RF power over a long lifetime, giving you an excellent return on investment. Their modular design reduces manufacturing costs, enabling us to offer highly competitive pricing.

### **World-Class Service and Support**

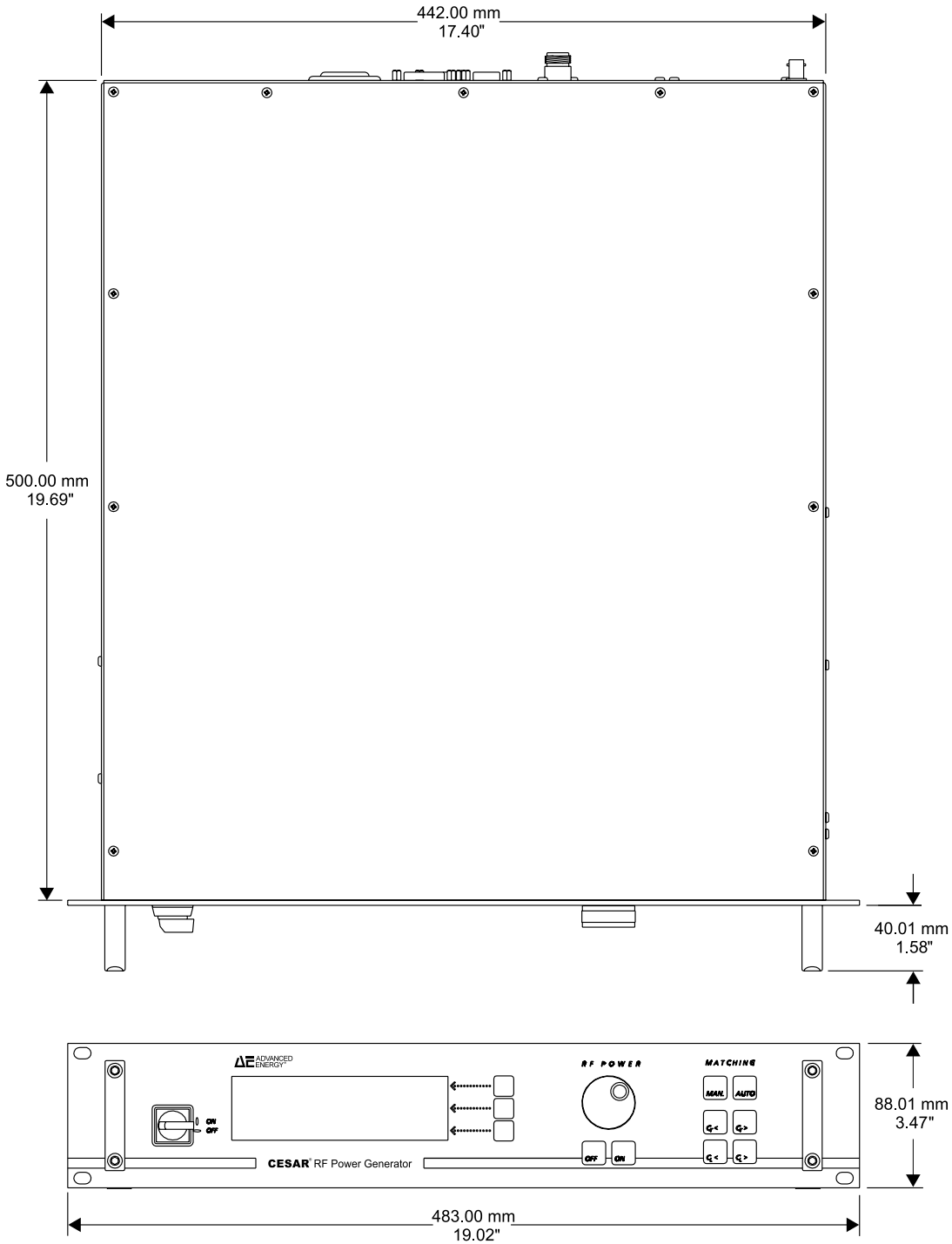
No matter what your need or location, our international network of support sites, exceptional application experience and expertise, and 24-hour-a-day, seven-day-a-week availability ensure superior service and fast turnaround.



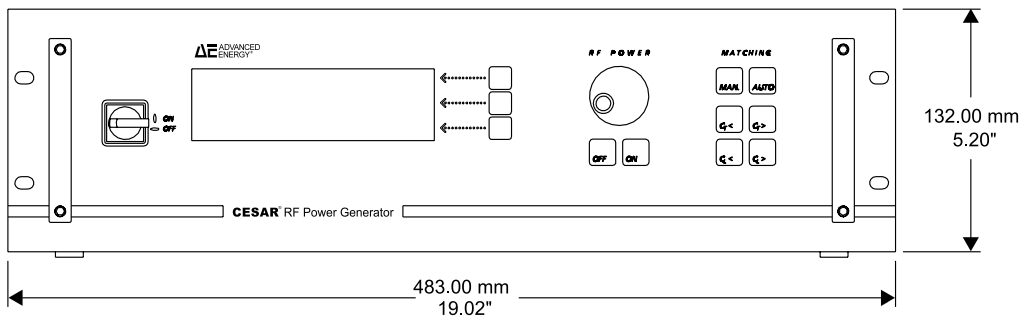
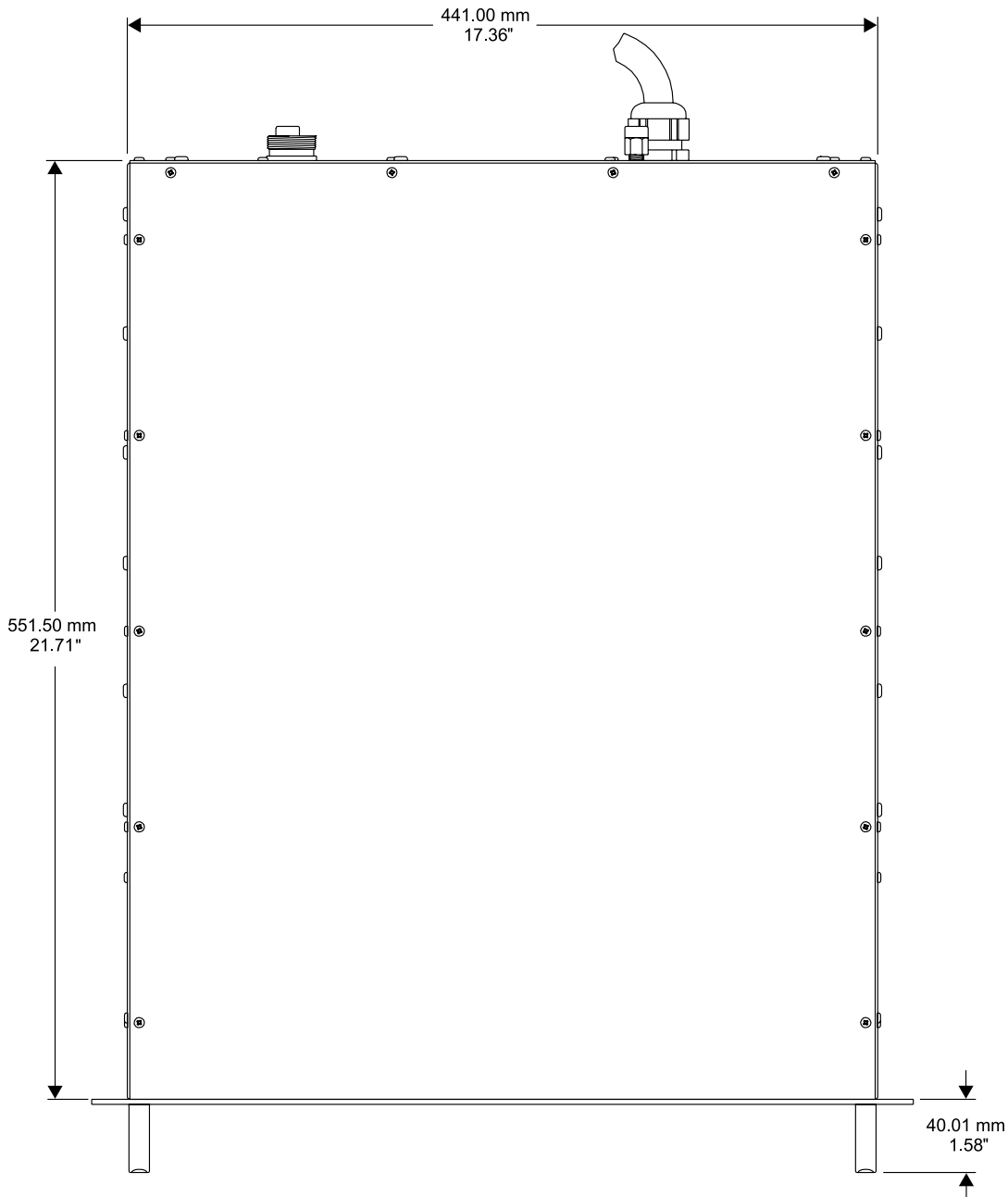
# Electrical Specifications

Model	Frequency	RF Power	AC Mains	Dimensions	Cooling	Water Fitting				
026	2.000 MHz	600 W	230 V (187 to 253 V)	483 mm (W) x 500 mm (D) x 88 mm (H) 19" (W) x 19.7" (D) x 3.5" (H)	Air	N/A				
0210		1000 W								
0220, 200 V		2000 W	3 x 200 V (180 to 230 V)	483 mm (W) x 552 mm (D) x 132 mm (H) 19" (W) x 21.7" (D) x 5.2" (H)	Water	For water tubing 10 mm O.D., 8 mm I.D.				
0220, 400 V			3 x 400 V (360 to 440 V)							
0225, 200 V		2500 W	3 x 200 V (180 to 230 V)							
0225, 400 V			3 x 400 V (360 to 440 V)							
0230, 200 V		3000 W	3 x 200 V (180 to 230 V)							
0230, 400 V			3 x 400 V (360 to 440 V)							
0250, 200 V		5000 W	3 x 200 V (180 to 230 V)							
0250, 400 V			3 x 400 V (360 to 440 V)							
046	4.000 MHz	600 W	230 V (187 to 253 V)				483 mm (W) x 500 mm (D) x 88 mm (H) 19" (W) x 19.7" (D) x 3.5" (H)	Air	N/A	
0410		1000 W								
0420, 200 V		2000 W	3 x 200 V (180 to 230 V)	483 mm (W) x 552 mm (D) x 132 mm (H) 19" (W) x 21.7" (D) x 5.2" (H)	Water	For water tubing 10 mm O.D., 8 mm I.D.				
0420, 400 V			3 x 400 V (360 to 440 V)							
0425, 200 V		2500 W	3 x 200 V (180 to 230 V)							
0425, 400 V			3 x 400 V (360 to 440 V)							
0430, 200 V		3000 W	3 x 200 V (180 to 230 V)							
0430, 400 V			3 x 400 V (360 to 440 V)							
0450, 200 V		5000 W	3 x 200 V (180 to 230 V)							
0450, 400 V			3 x 400 V (360 to 440 V)							
133	13.560 MHz	300 W	230 V (187 to 253 V)				483 mm (W) x 500 mm (D) x 88 mm (H) 19" (W) x 19.7" (D) x 3.5" (H)	Air	N/A	
136		600 W								
1310		1000 W								
1312		1200 W								
1320, 200 V		2000 W	3 x 200 V (180 to 230 V)	483 mm (W) x 552 mm (D) x 132 mm (H) 19" (W) x 21.7" (D) x 5.2" (H)	Water	For water tubing 10 mm O.D., 8 mm I.D.				
1320, 400 V			3 x 400 V (360 to 440 V)							
1325, 200 V		2500 W	3 x 200 V (180 to 230 V)							
1325, 400 V			3 x 400 V (360 to 440 V)							
1330, 200 V		3000 W	3 x 200 V (180 to 230 V)							
1330, 400 V			3 x 400 V (360 to 440 V)							
1350, 200 V		5000 W	3 x 200 V (180 to 230 V)							
1350, 400 V			3 x 400 V (360 to 440 V)							
273		27.120 MHz	300 W				230 V (187 to 253 V)	483 mm (W) x 500 mm (D) x 88 mm (H) 19" (W) x 19.7" (D) x 3.5" (H)	Air	N/A
276			600 W							
2710	1000 W									
2720, 200 V	2000 W		3 x 200 V (180 to 230 V)				483 mm (W) x 552 mm (D) x 132 mm (H) 19" (W) x 21.7" (D) x 5.2" (H)	Water	For water tubing 10 mm O.D., 8 mm I.D.	
2720, 400 V			3 x 400 V (360 to 440 V)							
2740, 200 V	4000 W		3 x 200 V (180 to 230 V)							
2740, 400 V			3 x 400 V (360 to 440 V)							
403	40.680 MHz		300 W	230 V (187 to 253 V)	483 mm (W) x 500 mm (D) x 88 mm (H) 19" (W) x 19.7" (D) x 3.5" (H)	Air				N/A
405		600 W								
4010		1000 W								
4020, 200 V		2000 W	3 x 200 V (180 to 230 V)	483 mm (W) x 552 mm (D) x 132 mm (H) 19" (W) x 21.7" (D) x 5.2" (H)	Water	For water tubing 10 mm O.D., 8 mm I.D.				
4020, 400 V			3 x 400 V (360 to 440 V)							
4040, 200 V		4000 W	3 x 200 V (180 to 230 V)							
4040, 400 V			3 x 400 V (360 to 440 V)							

## Dimensional Drawings



Cesar RF power supply,  
19", 2 U, air cooled



Cesar RF power supply,  
19", 3 U, air cooled



For international contact information, visit [advanced-energy.com](http://advanced-energy.com).

[sales.support@aei.com](mailto:sales.support@aei.com)  
+1 970 221 0108

## 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

---

Specifications are subject to change without notice. Not responsible for errors or omissions. ©2018 Advanced Energy Industries, Inc. All rights reserved. Advanced Energy®, AE®, and Cesar® are U.S. trademarks of Advanced Energy Industries, Inc. SEMI™ is a U.S. trademark of Semiconductor Equipment & Materials International.