

Pinnacle® Diamond

8-, 10-, and 15-kW dc power supply

Benefits

Proven Pinnacle® performance and reliability

Maximum process efficiency—lowest operating and installed cost

Versatile—excellent in both process and bias applications

Fast, configurable arc response—low arc damage

Precise process control

Numerous display/control options

Safety/emissions compliant

Features

Highest efficiency and power factor in the industry

Compact—up to 15 kW in a 3-U, ½-rack package

Wide, single tap

Profibus and RS-232 serial communications

Target-conditioning cycle (TCC)—minimizes conditioning time for new targets

Water-cooled

400 VAC input only

Low stored energy—less than 6 mJ per 1 kW of output

Output repeatability of $\pm 0.1\%$ at $> 15\%$ power

Joule mode—optimized energy delivery

Programmable limits for output level, strike voltage, and process voltage

Non-volatile memory storage of settings

CE marked

In both process and bias applications, the Advanced Energy (AE) Pinnacle® Diamond DC power supply provides the highest efficiency and power factor available, resulting in the lowest operating and installed cost in the industry. Remarkable Pinnacle process consistency and control deliver the additional benefits of significantly reduced variation and higher yields—all from one exceptionally compact unit.

Maximum Process Efficiency—Lowest Cost

With superior efficiency ($> 90\%$) and the highest power factor (0.9 at > 2.4 kW power) in the industry, the Pinnacle® Diamond power supply offers the lowest operating and installed cost.

The Pinnacle Diamond supply has a wide, single tap. It is available in either 400 to 800 VDC or 500 to 1000 VDC.

Target-conditioning cycle (TCC) mode limits output power based on arc rate and average power delivered.

Streamlined engineering delivers superior reliability, high output-voltage consistency, and a highly accurate, fast ramp response.

Fast, Configurable Arc Response

Pinnacle Diamond units store < 6 mJ per 1 kW of output. With a hard-arc detection time of $3 \mu\text{s}$, they are approximately ten times faster than competing units. Hard-arc shutdown from full power results in power interruption of only $10 \mu\text{s}$.



Sophisticated arc-handling capabilities enable you to program voltage trip level, delay to shutdown, and shutdown time to match your process. Pinnacle Diamond units automatically implement pre-set process values when you select your target type (metal or non-metal).

Precise Process Control

Joule mode enables you to set delivered energy for each process run and adjusts for ramp time and lost energy during arc events—providing $> 1\%$ accuracy.

- *Selectable operation as a power, current, or voltage source*
- *Programmable ramp/run recipes*
- *Programmable process limits for output level as well as strike and process voltage*

16-bit control circuitry enables the fastest, most accurate ramp-to-set point response available (< 1.5 ms) with output repeatability of $\pm 0.1\%$ at $> 15\%$ power.

Non-volatile memory stores and preserves recent settings in case of a shutdown

Display/Control Options

Profibus and AE Bus (RS-232 serial) control options enable you to adjust joule-mode, output-limit, ramp/run-

recipe, and arc-response settings. You can also turn the unit on and off via the User Port. Optional AE Virtual Front Panel (VFP), allows full control of the unit with VFP software and a personal computer.

Safety/Emissions Compliant

Pinnacle Diamond units are CE marked and conform to Low Voltage Directive 73/23/EEC and Electromagnetic Compatibility Directive 89/366 EEC—meeting EN55011 (emissions), EN61000-6-2 (immunity), and EN50178 (safety).

Specifications

Connector/Cable	
Output Power	2-pin Harting connector
AC Input Power	3-pin Harting connector
Communications	
Profibus*	9-pin, shielded, female, subminiature-D connector
Virtual Control Panel/Flash Port/AE Bus (RS-232)*	9-pin, shielded, female, subminiature-D connector
User Port*	15-pin, shielded, female, subminiature-D custom connector (on/off only)

*See manual for cable configurations, cable requirements, and signal descriptions.

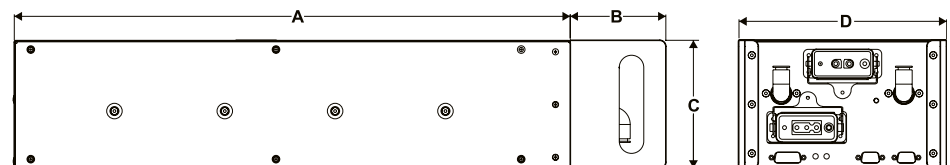
Environmental	
Temperature Coefficient	< 0.005% per 1°C variation in the regulated output parameter over +20 to +40°C (+68 to +104°F) ambient temperature range from 20 to 100% of full scale

SEMI F47-0200
Complies with the SEMI F47-0200 specification for semiconductor processing equipment voltage SAG immunity (Criteria B).

Electrical	
Input Power Specifications	
Line Voltage	400 VAC $\pm 10\%$; 3 ϕ , 4 wire, 50 to 60 Hz, no neutral
Line Current	5 A per ϕ , nominal line
Line Regulation	$\pm 1\%$ for a 10% line voltage change or a $\pm 2\%$ frequency change
Overcurrent Protection	30 ADC bus fuse
Output Specifications	
Output Power	8, 10, and 15 kW
Output Voltage	400 to 800 VDC full-power output (500 to 1000 VDC option also available)
Output Ripple Voltage	Component of output ripple voltage related to input line frequency: $\pm 5\%$ RMS
Efficiency	> 90% at full power
Power Factor	0.9 for loads > 2.4 kW
Repeatability	From run to run at a constant set point: <ul style="list-style-type: none"> 0.1% from 15- to 100%-rated power 0.2% at < 15%-rated power
Load Regulation	$\pm 1\%$ for 4:1 load change within V-I limits of tap range
Output Actual to Readback Accuracy	Serial interface $\pm 1\%$

Dimensions

Unit	A	B	C	D	Weight
8 and 10 kW	499.70 mm; 19.68"	99.10 mm; 3.90"	132.3 mm; 5.21"	215.90 mm; 8.50"	17.20 kg; (38 lb)
15 kW	575.90 mm; 22.68"	99.10 mm; 3.90"	132.3 mm; 5.21"	215.90; 8.50"	20 kg (45 lb)



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