

PDX[®] Low-Power Series

Lightweight, Compact, CE-Marked Power Supplies with High Reliability

Benefits

- Enhances process flexibility
- Improves throughput
- Optimizes process control
- Ensures high repeatability
- Eases integration

Features

- Sinusoidal RF output for low harmonic distortion
- Wide operating frequency range for optimal process control
- Tightly regulated output power
- Low EMI/RFI
- Remote operation capability

The PDX[®] low-power (1250 and 1400 W) series of mid-frequency power supplies offers a highly efficient, compact, easy-to-integrate source of power for a wide variety of process applications. These highly reliable power supplies enhance process flexibility, deliver a wide operating frequency range for optimized process control, ensure high process repeatability, and improve throughput.

Enhances Process Performance and Flexibility

Advanced Energy[®]'s PDX low-power (LP) series is available in 1250 and 1400 W versions. These power supplies offer a highly efficient, compact, easy-to-integrate source of power for a wide variety of semiconductor process applications, including:

- PECVD
- Etch
- Dielectric sputtering
- Plasma polymer processes
- Substrate biasing

The LP PDX power supply's precise measurements provide accurate, highly repeatable process control, helping to ensure process uniformity and high throughput. Its wide frequency range of operation delivers optimal control across a variety of applications.

The PDX 1250 power supply uses a single- ϕ input, while the PDX 1400 supply uses a three- ϕ input. The mean time between failures for the PDX 1250 power supply's field population is in excess of 200,000 hours.

Key LP PDX Power Supply Features

- Sinusoidal RF output with low harmonic distortion: At full output power, all harmonics are > 40 dB below the fundamental output frequency.
- Operation over a wide frequency range for optimum control of particular specie production: Fixed frequencies between 235 and 450 kHz are available. The center frequency can be varied over 50 kHz via the front panel or I/O controls.
- Tightly regulated output power based on an operator-provided set point signal: The set point can be established using either the front panel or the remote user interface. You can choose the set point power to represent the LP PDX supply's output power or the power delivered to the load. (Load power is computed from the forward power.)
- A power-conversion technique that stores virtually no energy at the output and, with proper system shielding techniques, produces little EMI/RFI: The LP PDX power supply is equipped with a standard internal power line filter.

Remote Operation

User connectors provide remote interface and control from the rear panel. Automatic limiting occurs when voltage, current, or power dissipation exceed preset limits.

Digital input signals can be either open collector drain or 15 V CMOS. Digital outputs are open drain. Analog signals are 0 to 10 V.

Theory of Design

The LP PDX design has four main sections:

- *RF filter*
- *Left chassis*
- *Switch*
- *Output*

The switch section uses pulse-width-modulated (PWM) switching technology, a highly efficient design that produces a tightly regulated, ripple-free input to the RF section.

Built-In Protection

The LP PDX power supply has complete internal protection for over-voltage, over-current, over-power, and open and short circuits.

Compliance Certifications

Many CE-marked LP PDX models are available. Some models are GS certified, while others are NRTL certified.

Specifications

| Physical | PDX® 1250 | PDX® 1400 |
|---|--|--------------------------------|
| Size | 89 mm (H) x 483 mm (W) x 483 mm (D) 3.5" (H) x 19" (W) x 20" (D) standard rack mount | |
| Weight | < 14 kg (31 lb) | |
| Customer Interface | User port and/or active front-panel controls | |
| User Port Connector | 25-pin, sub-miniature D, male | 9-pin, sub-miniature D, female |
| Serial Port Connector | None | |
| 50 W Output Connector and Load Match Output Connector | N or C | C or HN |

| Electrical | PDX® 1250 | PDX® 1400 |
|-------------------------|--|--|
| RF Output Power | 18 to 1250 W | 25 to 1400 W |
| Frequency | 325 to 450 kHz | 235 to 305 kHz |
| Load Match Transformer | 10 to 350 Ω , 7 taps | 40 to 200 Ω , 7 taps |
| Internal Reactive Match | Inductor available | |
| Maximum Reflected Power | 250 W | 280 W |
| Harmonics | At full rated power, all harmonics are > 50 dB below the fundamental output frequency. | At full rated power, all harmonics are > 40 dB below the fundamental output frequency. |
| Input Voltage | 180 to 253 VAC, 50/60 Hz, single ϕ | 180 to 230 VAC, 50/60 Hz, 3 ϕ |
| Input Current | 15 A _{RMS} max | |
| Maximum Output Voltage | 300 V | |
| Maximum Output Current | 6 A | |
| Regulatory Accuracy | 1% of set point or 2 W, whichever is greater | |

| Environmental | PDX® 1250 | PDX® 1400 |
|-----------------------|-----------------------------|-----------|
| Operating Temperature | 35° C (95°F) max | |
| Cooling | Air (gas), 35° C (95°F) max | |

Note: Specifications are subject to change without notice.