

# MATERIALS SCIENCE, INC.

Vacuum & Thin Film Technology



## Ion™ Series DC Magnetron Power Supply



- Superior Arc Detection & Suppression - < 100 nsecs (.1 μ secs) Response Time - < 1mJ Arc Energy
- 500 watt, 1000 watt & 1500 watt Output Power Versions
- Adjustable Arc Detection Delay & Off Time Before Restarting
- Voltage, Current and Power Regulation Modes
- Adjustable Power Ramping ■ Adjustable Run Timer
- Extremely Precise Resolution and Run to Run Repeatability
- Stored Target Parameters for Up to 7 Separate Targets
- kWhr Counting & Time Limit
- RS-232 & Analog Communication Capability
- Wide 0-1000 Volt Range Compared to 0-800 volts Supplied by Competitors – Full Rated Power Can be Applied Under Nearly all Conditions
- Stable Operation down to 20 watts for non-reactive processes
- Suitable for use as a Substrate Bias Power Supply up to 1000V
- Large Impedance Range - No Transformer Tap Changes Are Necessary to Operate Across Entire Range
- Compact, low profile chassis – Saves rack space
- 2 Year Warranty ■ CE, ETL/NRTL Compliant

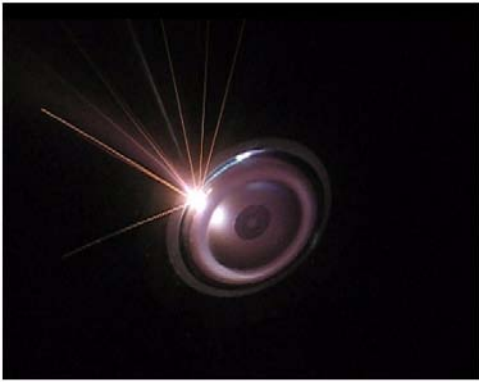


### Complete Sputtering Packages

Polaris™ GEN II 2" & 3" Research Sputtering Sources used in combination with the Ion™ 1500 allow performance not possible with any other sputtering source and DC power supply, for example:

- Sputter 1/4" [6,35 mm] thick Ni targets
- Deposit insulating films from metallic targets without the use of expensive power supplies in an essentially arc-damage free environment
- Achieve superior target utilization
- Apply virtually full rated output of power supply to source across broad pressure range
- Deposit very thin films at extremely low power levels

## Arc Damage is Virtually Eliminated When Arc Detection & Suppression is Activated



Hard arc on Al target in O<sub>2</sub> environment on 3" Polaris™ source - no arc suppression



Same view & conditions as at left, but with plasma re-igniting - arcing is still decaying



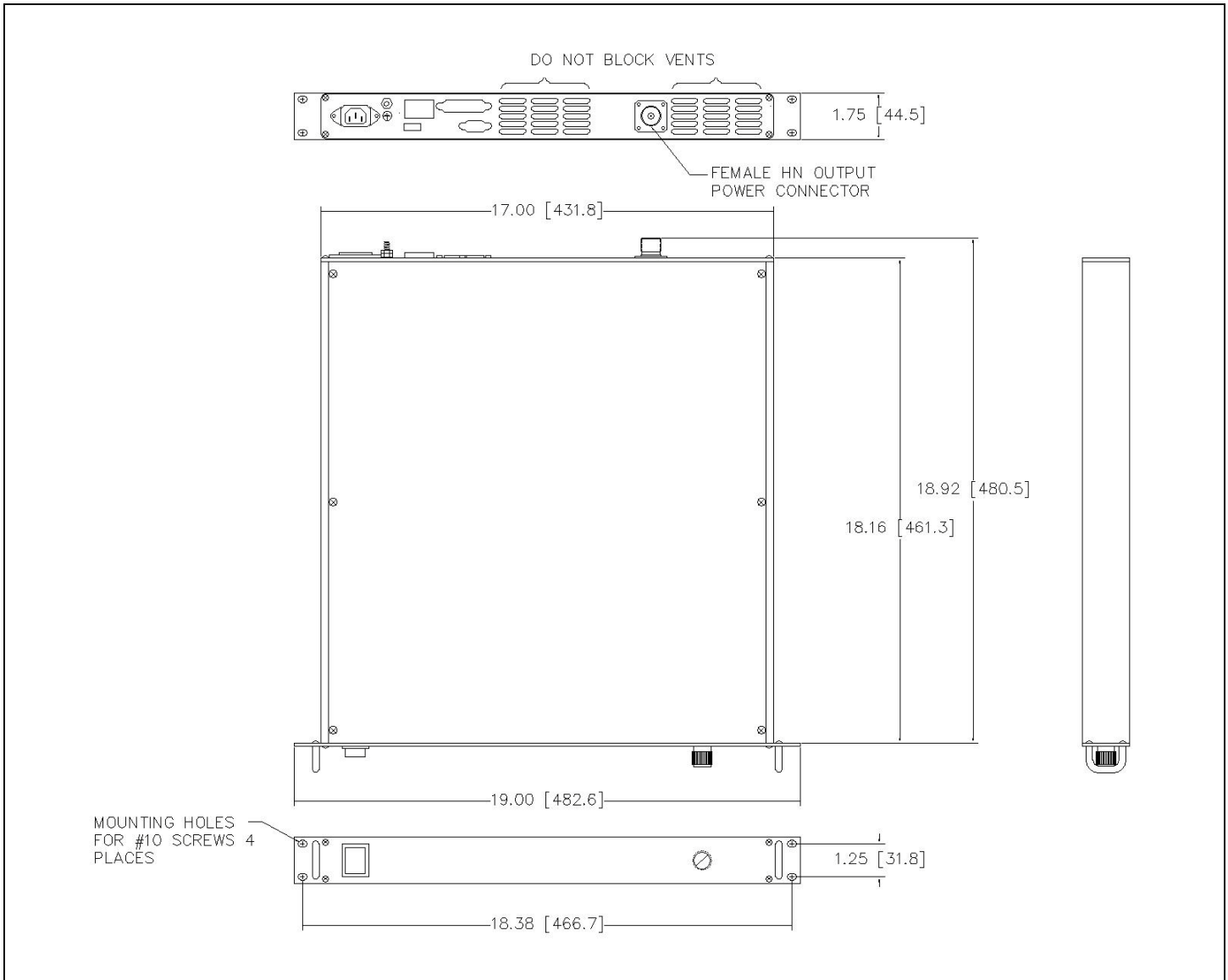
Arc suppression of Ion™ 1500 working in same environment & conditions - producing a stable plasma & good target utilization with negligible arc induced damage

## Specifications

Description	Value
Input Frequency	50 - 60 Hz
Input Phase	1 phase
Input Voltage	100 - 250 VAC (lower VAC may limit output)
Input Current	13.7 amps maximum
Power Factor	> 0.98
Input Power Consumption	1.75 kW
Output Power	1500 watts; 1000 watts; 500 watts
Output Power @ 1000 volts	1500 watts; 1000 watts; 500 watts
Output Power @ 500 volts	1500 watts; 1000 watts; 500 watts
Output Power @ 200 volts	800 watts; 600 watts; 400 watts
Output Power Resolution Compared to Setpoint - 500 to 1500 watts	± 1 watt repeatability
Output Power Resolution Compared to Setpoint - 500 watts or less	± 0.5 watt repeatability
Output Voltage (steady state)	1000 volts maximum
Output Voltage (strike)	1000 volts maximum
Output Current (maximum)	4 A (1500 watts); 3 A (1000 watts); 2 A (500 watts)
Arc Detection Time	< 100 nsecs (.1 μ secs)
Arc Energy	< 1 mJ
Arc Detect Delay Time	0.1 to 6500 μ secs (adjustable)
Arc Out/Off Time	0 (no arcing handling) or 32 to 65000 μ secs (adjustable)
Arc Rate Counter	Yes
Arc Recovery Time	Set points will be re-established < 200 μ secs after arc off time
Line Regulation	> 99% (includes load and line variations over an arbitrary time interval) - aka < 1%
Load Regulation	> 99% (includes load and line variations over an arbitrary time interval) - aka < 1%
Power Ramping	0.001 to 65 seconds (adjustable)
Run Timer	0.1 to 6553 seconds (adjustable)
kWhr Counting	Yes
kWhr Limit	0 (limit shutdown disabled) or 0.01 to 655 kWhr's
LED Display Accuracy	1%
Display Resolution	0.1 watt, 1 volt, 0.001 amp (1 milliamp)
Stored Target Information	Stores parameter sets for targets that can be re-installed after exchange. Saves P/V/I, ramp time, run time, arc detect delay, arc off time, kWhr's for 7 separate targets
Interlocks	1 each
Temperature Monitoring/Protection	Yes. "Fan on Demand" cooling with thermal shutdown protection.
Dimensions	48.3 cm/19" x 47.6 cm/18.75" x 4.44 cm/1.75" (1 U Rack Height)
Weight	8.2 kG/18 pounds
RS-232/Analog Interfaces	Yes
DC Bias Operation	Basic open circuit operation between 1000 volts to < 100 volts
Output Power Connector	Female HN

Manufactured in the United States of America

# Dimensions



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