

MATERIALS SCIENCE, INC.

Vacuum & Thin Film Technology

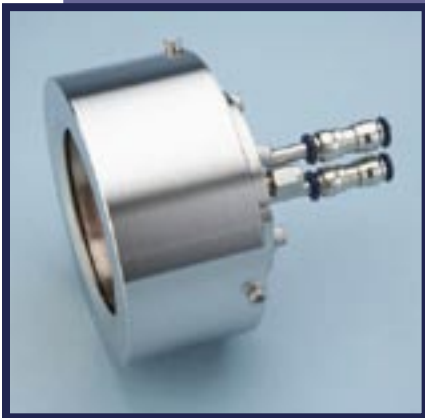
POLARIS™ GEN II

300 Series Research RF Sputtering Packages

- 300 Watt Low Cost Package for Those With Limited Budgets
- 13.56 MHz RF Power Generator Allows All Materials to be Sputtered
- 19" Rack Mount with Power Supply and Integrated Manual Matching Network
- Power Cable and RF Feedthrough Included
- 2" & 3" Sputter Sources

Description

Everything required to install the Polaris™ internally mounted sputtering source into the users system and connect it with the power generation system is supplied. Included is one of a series of standard feedthrough assemblies, all necessary electrical, water, gas and vacuum hardware and a 3' long shielded cable between the feedthrough assembly and the power supply/ matching network.



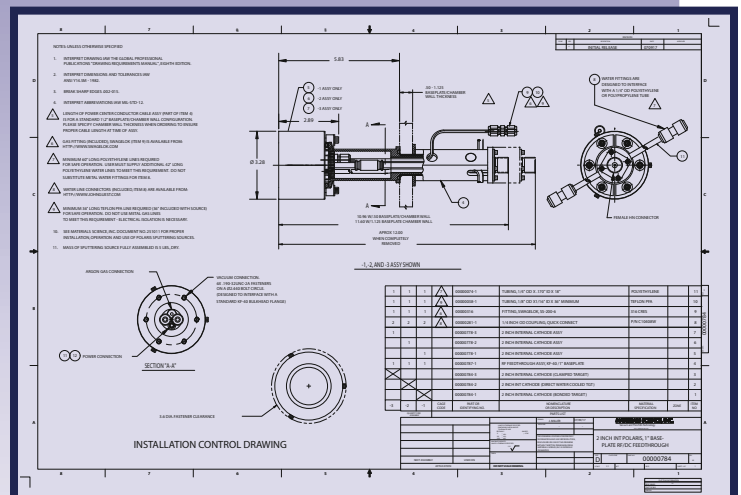
Polaris™ Sputtering Source

A comprehensive documentation package is provided. Other feedthrough arrangements and cable lengths are possible – please consult the factory or visit our web site for more information. A 300 watt 13.56 MHz power supply and manually adjusted impedance matching network are integrated into a single, 19" rack mount unit. The manually adjusted impedance matching network provides the user with a broad tuning range. The network includes a series inductor with a field changeable tap and optional additional fixed shunt capacitors, enabling it to match a wide range of impedances. The RF generator allows precise power and process control from the front panel



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or via a rear panel analog interface. Power and tuning (capacitor) adjustment are accomplished through front panel mounted 10-turn, locking potentiometers. A set-point control knob allows the operator to set and vary Forward RF Power or DC Bias. An alternate action switch with LED indicators selects either forward RF power or DC Bias. Digital meters display Forward and Reflected Power and DC Bias developed on the source. The external control interface on the back of the PB-3 allows the unit to be controlled by the user's programmable controller or computer. Safety and functional interlocks are provided, as well as over-temperature protection circuitry. The PB-3 incorporates high efficiency switch mode power supplies and solid-state technology. They are very robust and can accept 40% reflected power before they operate in fold-back mode.



Typical Feedthrough Assembly

SPECIFICATIONS

| | |
|-----------------------------------|---|
| Sputtering Source | P/N 00000773 2" diameter target and P/N 00000697 3" diameter target Internally Mounted Polaris™ with bulkhead KF-40 flange per sales brochure MC 600 |
| Feedthrough Assembly | P/N 00000787 KF-40 to 1" Baseplate Feedthrough, P/N 00000789 KF-40 to 3/4" OD Tube Adjustable Position Feedthrough. Other feedthrough arrangements are available. |
| Power Supply | |
| AC Mains Input | 95-120 or 187-240 VAC, Single Phase, 50/60 Hz, 5A maximum |
| RF Output Power | 0-300 watts into a 50 ohm load |
| Output Frequency | 13.56 MHz ± .005% |
| Output Impedance | 50 Ω resistive |
| Output Connector | Female BNC to Matching Network (External connection) |
| Output Power Stability | ± .5% of setpoint |
| Cooling | Forced air via a 110 cfm fan |
| Operating Environment | Maximum 90% relative humidity. Maximum 100 degrees F ambient temperature |
| Size – Rack Mount Power Supply | 19" x 7" Rack Mount Panel x 16" Deep |
| Weight | Nominal 22 pounds |
| Impedance Matching Network | |
| RF Output Connector | Female HN Coaxial Cable Connector |
| RF Input Connector | Male BNC Coaxial Cable Connector – from Power Supply (External connection) |
| Circuit Topology | "L" using a variable shunt capacitor and a tapped series inductor and variable capacitor |
| Matching Network Element Values | Shunt Capacitor: 1000 pF; Series Capacitor: 488 pF; Series Inductor: 2.5 uH |
| Output Impedance | Wide range. Will match sputtering source over entire normal pressure range of operation. |
| Output Cable Supplied | 36" long RG-393 cable with Male HN Coaxial Connectors both ends. Cables longer than 72" should not be used to minimize reflected power and cable heating. |
| Ordering Information | Call factory or refer to our web site for a complete list of possible package combinations. |



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Visit our Web Site: www.msi-pse.com for CAD drawing blocks, complete specifications, performance data, ordering information, drawings and dimensions, backing plate and target fabrication data.

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