



# HELIUS™

RF POWER SYSTEMS



*RF POWER SYSTEMS  
FOR  
PLASMA PROCESSING*



- **Compact rack mount design**
- **Analog & serial bus interface**
- **Stable RF power amplifier design**
- **High efficiency AC mains power conversion with power factor correction**
- **Internal data logging & event reporting**

The **Helius** RF power system is specifically designed for continuous use in semiconductor and industrial plasma processing applications. Proven push-pull RF amplifier topology enables stable output into dynamic plasma load conditions. A power factor corrected, high current switch mode power supply module is employed to convert the AC mains power into the low voltage required by the RF amplifier.

## CONCEPT

The **Helius** control system is built around a high speed microprocessor and memory module. This provides accurate process control and active hardware management. Many internal operating parameters and all soft (or hard) faults may be monitored and used for process control when directed to the process system controller via the various interface ports. Connectivity to the user's system is made possible via analog, RS232, DeviceNet or Profibus interfaces. The **Helius** product platform is compliant with typical industry accepted regulations including NRTL and CE. Internal RF control sensors are optimized for each power level resulting in a high degree of control vs. output linearity.

All subsystems are designed to withstand the rigors of 100% duty cycle industrial environments; heat sinks are constructed from bonded copper plate, enclosures are manufactured from chemically treated metals and electrical components selected to operate well within their typical ratings. Active thermal management coupled with tight control leads to an unparalleled MTBF rating.

Today's semiconductor and technology industries demand a product that has an excellent value vs. price rating. The **Helius** product line meets this criteria. In addition, we include advanced control features and RF system performance. **Manitou** offers the complementary **Accu-Match™** products (automatic impedance matching network) and interconnection devices (cables & output switch modules) to complete the RF power system package. These products are designed to operate with all types of plasma source loads.

Manitou Systems enhances the technology package deliverable with customer site applications engineering, factory repair services and complete OEM product solutions.

## VALUE

Operation and programming of the **Helius** is accomplished through the use of the touch switches and a three axis rotary encoder wheel. The encoder's push motion is used to scroll through the various display screens while the rotary action is used for selecting the values. Membrane touch switches are also used during programming and to actuate the RF Output, Reset Faults and manually operate the **Accu-Match** module,

Display of critical operating values and diagnostics is accomplished via a blue-white graphical LCD display. Discrete, multi-colored LED indicators are provided on the left side of the panel to indicate faults and system status. As with all Manitou products, we include the impedance matching controls on this panel at no extra cost. Durable, powder coated handles provide protection and the ability to lift the **Helius** into a rack cabinet enclosure.

## INTERFACE

The **Helius** includes as standard both Analog & RS232 I/O connections. Profibus and DeviceNet interfaces are offered as an option. The serial interfaces offer both system control as well as a streaming data output of critical operating and diagnostic parameters. The analog I/O affords an inexpensive method by which the **Helius** can be connected to a process system controller.

Typical Analog signals are: RF On, Selection of output regulation, Fault, RF output metering, DC Bias level metering, Output level set, RF On/Off, and Pulse mode input.

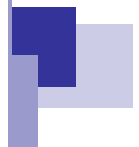
The serial interface includes the same signals as the Analog port in addition to: Internal temperature measurements, RF amplifier operating voltage & currents, Internal "soft" failure activities, cooling fan rotation faults, and other software programmable diagnostics.

**Accu-Match** diagnostic and operational signals are typically available via the **Helius** serial interfaces.

A separate connection is used for the user's safety interlock.

Forced air *and* forced air/water cooling ensure that optimal component operating temperatures are maintained. To ensure long lifetime all cooling fans are managed by onboard digital controls offering a sleep mode during idle periods and variable speed to meet the thermal need. The fan management system also includes active faults upon locked rotor and over temperature fault conditions.

## FEATURES



Helius Model #	H30013	H60013	H1K13	H2K13	H3K13	H5K13
<b>Operating Frequency</b>	13.56 MHz Typical Other frequencies are available - Visit the web site for additional information					
<b>Maximum Output Power (Watts)</b>	300	600	1,000	2,000	3,000	5,000
<b>RF Output Connection</b>	Type N Female			Type 7/16 DIN Female		
<b>AC Mains Requirements</b>	187>240 VAC 50/60 Hz Single Phase			187>240 VAC 50/60 Hz Three Phase		
<b>Cooling Method</b>	Forced Air			Forced Air & Water		
<b>Product Weight</b>	40 Lbs	42 Lbs	44 Lbs	70 Lbs	77 Lbs	80 Lbs
<b>Product Dimensions</b>	19" Wide X 22" Deep X 2RU High			19" Wide X 22" Deep X 3RU High		

The table shown above lists product models and their typical specifications. Manitou Systems offers OEM and custom products with non standard operating frequencies, special packaging and application specific options. Please consult the factory for additional information.

All models (unless otherwise specified) offer the following features as standard:

- Internal pulse capability (adjustable 15Hz to 65KHz).
- Common Exciter operation (with auto detection).
- 50 Ohm output impedance.
- Reflected power tolerance of 25 to 40% (of forward power) based on model.
- Programmable process presets.
- Manufactured in the USA

*For up to date pricing and delivery information please contact us at the address below:*



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*Technical specifications are subject to change without prior notice.  
See our web site or contact us directly for the latest specifications and pricing.*

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Represented By: