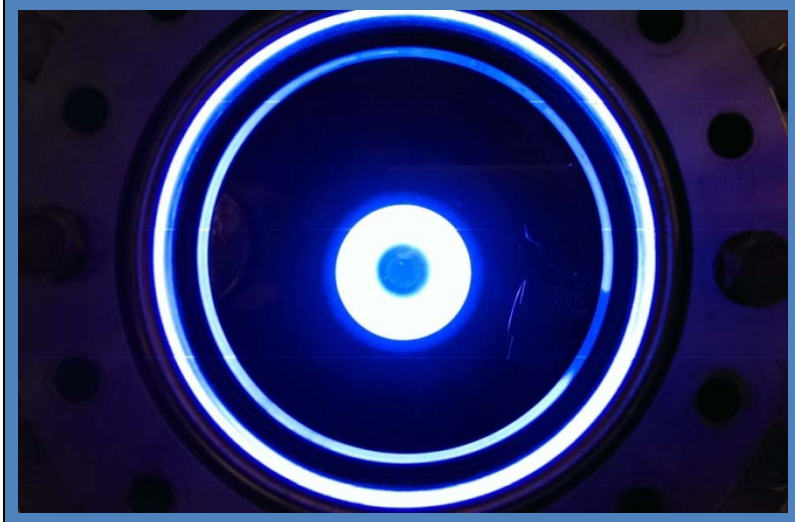
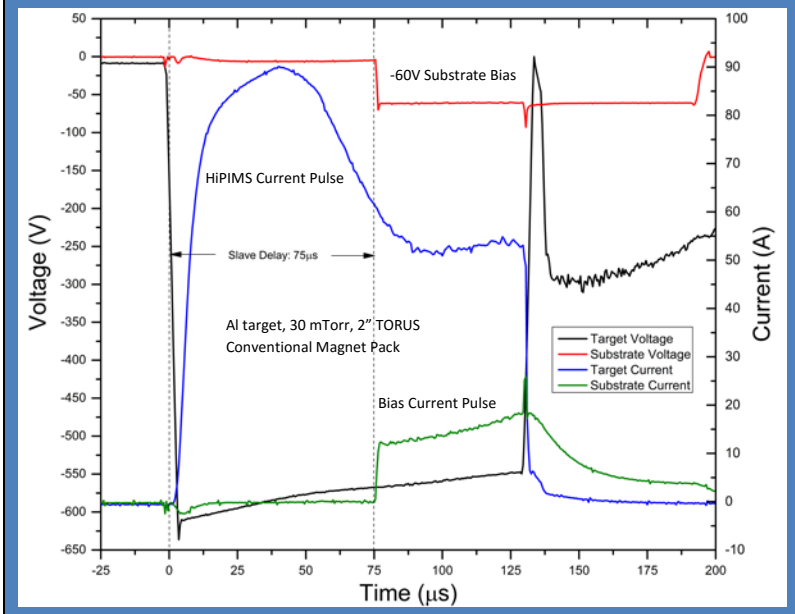
IMPULSE

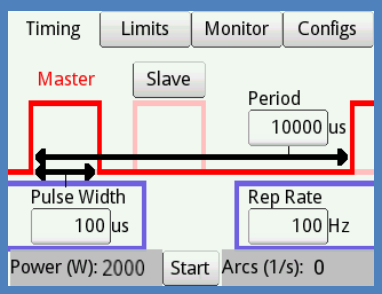
Cost-Effective, Versatile 2kW Pulsed Power Modules For Advanced Magnetron Sputtering By Starfire Industries LLC

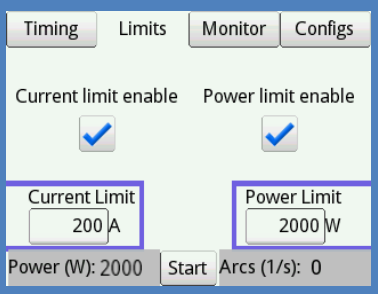
Kurt J. Lesker Company
Process Equipment Division

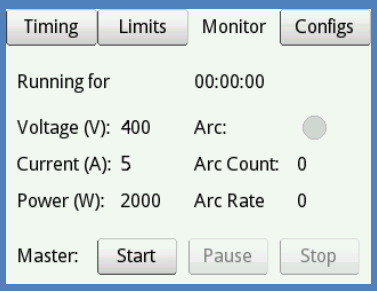
starfire industries

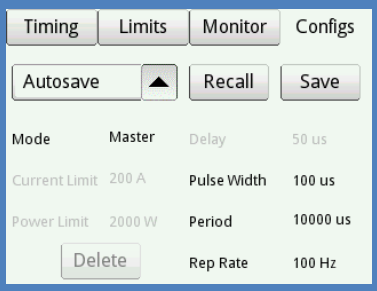












Applications

High-Power Impulse Magnetron Sputtering
High-Power Pulsed Magnetron Sputtering
(HiPIMS/HPPMS)

- Dense, high-hardness materials, non-porous films and superior optical coatings for university, industrial and governmental R&D applications
- Ideal for TORUS and TriPack magnetrons desiring high impulse power and pulse flexibility for high performance

Features

- Up to 1250V input voltage and 400A peak current capability for power handling and high deposition rate
- User selectable pulse width, frequency and peak current with sub-1µs arc detection and suppression technology
- Real-time discharge voltage and current monitoring; integrated power feedback with touch-screen control
- Constant power mode automatically throttles rep rate to maintain user-settable target power
- Precision master/slave module timing for substrate bias or cathode synchronization for co-deposition
- Connect several IMPULSE modules in parallel to drive higher power for larger, linear or cylindrical cathodes

Process

- Fully-compatible with standard TORUS (e.g. 2", 3" and 4"), new TriPack and linear magnetron configurations
- Easy way to upgrade existing DC sputtering systems for HiPIMS/HPPMS and reactive capability; use existing DC power supply as the charging supply or bias input*
- Software "pass through" mode allows user to switch between DC and HiPIMS without changing cables

Options

- Available dual module configuration in standard 2U rack to power multiple magnetron heads, i.e. cluster tools, or a pulsed substrate bias with sub-µs timing
- Touch screen interface with direct parameter entry and tactile knob control, plus rear panel RJ-45 interface with external TTL sync pulse and monitor outputs
- Higher-frequency and/or higher-power options available

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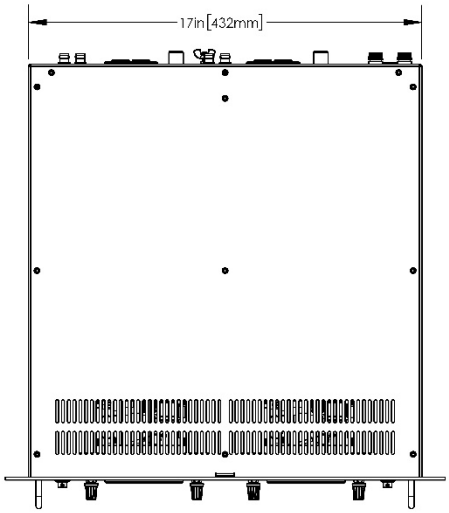
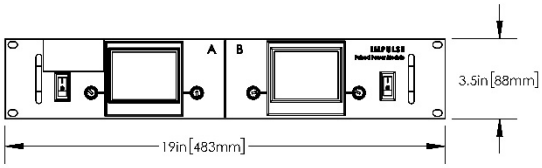
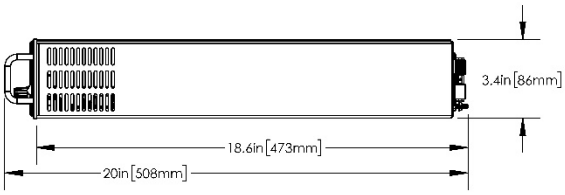


Dual Module Rack Mount Configuration
Shown For Pulsed Cathode & Pulsed Bias
With Touch Screen Interface





Specifications

Input Power Specifications	1 phase, 100-240 VAC, 50/60 Hz, 1 A
Input Charging Supply	1000 VDC nominal, 1250 VDC tolerant
Time-Average Power	~2 kW; subject to duty factor and rep rate
Output Peak Voltage	1000 V nominal, 1250 V tolerant
Output Peak Current	200 A nominal, 400 A tolerant
Arc Detection Time	< 1 µs
Peak Current Limiter	User selectable up to 400 A
Power Limit Mode	User selectable; automatically throttles rep rate to hold cathode power constant
Pulse Frequency	User selectable; 1 Hz to 2 kHz nominal range, subject to power derating curve
Pulse Width	User selectable, 5 µs to 500 µs nominal range
External Communications	RJ-45 control I/O, USB Type A, BNC sync line, BNC I-V monitor out
Pulse Module Sync	< 0.1 µs latency
Cabling	N-type HV connector standard, other options available
Configuration Storage	Onboard storage for 5 user selectable presets
Physical Dimensions	2U rack; 19" (W) x 3.5” (H) x 20” (L) including handles and plugins 482.6 mm (W) x 88.9 mm (H) x 508 mm (L)
Weight	Single Module: 9 lbs., 11.6 oz. 4.411 kg Dual Module: 13 lbs., 11.6 oz. 6.226 kg
Operating Temperature	+5C to +40C, Forced Air Cooling