10KW HiPIMS-Power Supply **hiP-V** 2000A

**Technical Data**

### TECHNICAL CHARACTERISTICS

**Output Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output power</td>
<td>10kW</td>
</tr>
<tr>
<td>Output voltage</td>
<td>0V to -1200V (voltage for nominal pulse and DC-mode).</td>
</tr>
<tr>
<td>Output Current</td>
<td>2000A (pulse peak) maximum. 20A average current for &lt;500V.</td>
</tr>
<tr>
<td>Pulse frequency</td>
<td>10Hz-1kHz at 1000/1200V, 2000A, with lower energy pulses the frequency can be increased (5kW max at 2kHz).</td>
</tr>
<tr>
<td>Regulation</td>
<td>Voltage / Power / Current</td>
</tr>
<tr>
<td>Pulse width</td>
<td>5μs to 1000μs or DC.</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>&lt;50% or DC 100%.</td>
</tr>
<tr>
<td>Arc detection / handling</td>
<td>&lt;3μs.</td>
</tr>
<tr>
<td>Current arc trip level (absolute)</td>
<td>Adjustable 10A to 2200A.</td>
</tr>
<tr>
<td>dI/dt arc trip level (Delta in %)</td>
<td>5% (less restrictive) to 95% (more restrictive).</td>
</tr>
<tr>
<td>Voltage stability</td>
<td>±2.5%.</td>
</tr>
<tr>
<td>Voltage ripple</td>
<td>&lt;5% rms.</td>
</tr>
</tbody>
</table>

**Projected Applications**

- HiPIMS, Uni-Polar / Bi-Polar (optional) / Dual Magnetron (optional)
- DC magnetron sputtering
- DC-pulse magnetron sputtering
- DC Bias
- DC-pulse Bias
- HiPIMS Bias- DC
- HiPIMS Bias DC-pulse Uni-Polar / Bi-Polar (optional)
- hiPlus (Positive Voltage Reversal, optional)
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**Input Line**

Nominal voltage: 400Vac 3ph ±15% (no neutral required).
Input: nominal current <21A.
Dielectric strength: 2500V, 50Hz, 1 minute.

*Adjustable positive Voltage (not yet released)*

Pulse voltage: 50V to 400V regulated, or no pulse -> Upp
Pulse current: 50Amp max
Pulse length: 5us to 50us -> ton
Delay: 5us to 50us (from end of negative pulse to start positive pulse)
Power: 1kw at 1kHz,

**Cooling Data (Air & Water)**

Force ventilated air cooling Front - air inlet, rear - air outlet.
Water cooling 15 litres/minute.

**Interface Data**

USB connection Standard USB cable type B.
Profibus Optional.
EtherCAT Optional.
Ethernet Optional.

**Output Connection Data**

Power connection M6 screws.
Cable type Triax cable recommended, coaxial, or twisted screen cable.
**Technical Data**

**Input Connection Data**

- Input connection 3-phase wires 6mm2 cross-section.
- Mains cable copper 2.5 - 6mm2 cross-section.
- Protection earth connection type 2.5 - 6mm2 cross-section.
- Internal main 16A circuit breaker.
- Interlock 24V DC (required for operation).

**Environmental Conditions**

- Operation Ambient temperature: 0°C to 40°C.
- Temperature inside the box 0°C to 70°C.
- Humidity up to 90% (creepage distances as per EN-61010-1).
- Maximum Height 1200m.
- Protection IP20.
- Not protected for water ingress. Protected against ingress of parts bigger than 12mm. It is intended for indoor use.

**Acoustic Noise**

- The equipment will produce an acoustic noise lower than 60dBA measured at 1 meter distance.

**Case**

- The unit is contained in a 19” rack module, 742mm deep and 9U high (405mm approx.).
- The weight is 92kg. Refer to drawing P-004353.
REFERENCE STANDARDS

The 10kW pulsed power supply described in this document is fully compliant, but not only, with the following standards:

**EN 61000-3-12-2006**
Electromagnetic compatibility (EMC) part 3-12: limits for harmonic currents produced by equipment connected to public low-voltage systems with input current greater than 16 a and equal to or less than 75 a per phase.

**EN 61010-1:2002**
Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements.

**MIL STD 217**
Reliability Prediction of Electronic Equipment.

**EN 61204-3-2002**
Low voltage power supplies, d.c. output - Part 3: Electromagnetic compatibility (EMC).

**EN 61000-6-3-2006**

**EN 61000-6-2-2006**
Electromagnetic compatibility (EMC) -- Part 6-2: Generic standards - Immunity for industrial environments.