10kW HIGH VOLTAGE POWER SUPPLIES

SERIES OL10K

FEATURES

- 10kW of output power
- Output voltages from 60kV to 200kV
- Positive or negative polarity to order
- Robust IGBT converter design
- Exceptional reliability
- High stability
- Excellent inherent ruggedness
- Arc count and Extinguish (ACE)
- CE Marked

APPLICATIONS

- Ion implantation
- Electron beam welding
- Ion vapour deposition
- Particle physics applications
- Inductive output tubes
- Electron beam curing
- Surface modification
DESCRIPTION

The Series OL10K is a range of high reliability products designed to meet the rigorous requirements of ion and electron beam systems. These high performance switch mode systems are based on a power converter using zero-volt switching. A full bridge of the latest generation of Insulated Gate Bipolar Transistors (IGBT’s) in a fully regulated close-loop system capable of continuously supplying up to 10kW of output power whilst maintaining flexible control down to a few hundred watts. These highly reliable rugged systems comprise two units, a rack mounting or free standing, power converter through which remote controls are facilitated and a separate HV unit employing a modular disc construction.

Numerous features are incorporated to ensure system integrity is maintained during adverse operating conditions. Such features include continuous primary current monitoring with fast pulse truncation and soft start, extensive thermal monitoring and automatic shutdown on key components, passive output current limiting for instantaneous surge control and independent output over voltage sensing. Optionally the HiTek Power Arc Count and Extinguish, ACE, system can be installed for active arc management.

Control: The power supply may be controlled by remote control via the 25 way D-type connector situated on the rear panel. Full control and monitoring functions are available by this method. Application of 0 to 10V to the voltage and current control lines programmes the unit for 0 to 100% of rated output. Similarly 0 to 10V signals provide monitors of the output voltage and current levels. The range also has full function local front panel control.

Protection: The units are fully protected against over voltage, over current, over temperature, load arcing and output short circuits. The ACE system can be installed to give added arc management functionality and a surge limiting resistor for severe environments.

Safety: The OL10K high voltage power supplies meet the requirements of the Low Voltage Directive, LVD, 73/23/EEC by complying with EN61010-1:2001 when installed as a component part of other equipment. They are CE marked accordingly. The power supplies described in this specification generate voltages that are hazardous and can be fatal. They should only be installed and used by personnel who have received the appropriate training and who are fully aware of the hazards.

SPECIFICATION

- **Input Voltage:** 208V AC +/-10% (187V AC to 229V AC) 47-63Hz 3 Phase via high power connector.
- **Input Current:** 40A rms., maximum per phase
- **Polarity:** Positive or Negative to order
- **Minimum Voltage:** 5% of rated output voltage. The unit may be turned down below this but the specifications are not guaranteed at that level.
- **Line Regulation:** Less than 0.1% change in output voltage for a 187V to 229V change in mains voltage.
- **Load Regulation:** Less than 0.1% of rated change in output voltage for a zero to full load change.
- **Ripple:** Less than a 0.1% peak to peak of rated output.
- **Transient Response:** The output will recover to within +/- 0.5% of set value in less than 200ms from the removal of a short circuit.
- **Temperature Coefficient:** 200 ppm/deg C (0.02%/deg C)
- **Drift:** Less than 0.5%/8 hours after 1 hour warm up.
- **Protection:** Over temperature, Output over-voltage, Constant current OR timed trip model.
- **Front Panel controls and indications:** Mains (Line) ON/OFF circuit breaker, HV ON/OFF switch, Local/Remote switch, Trip/Limit switch, HV OFF indicator, HV ON indicator, Remote indicator, Trip indicator, Voltage and Current Mode indicators, Arc Monitor indicator, 10-turn voltage demand potentiometer with turns-counting dial, 10-turn current demand potentiometer with turns-counting dial, digital or analogue output voltage meter, digital or analogue output current meter.
Environmental:
- Operating Temperature: 0°C to +40°C Ambient and air intake.
- Storage Temperature: -20°C to +85°C
- Humidity: -20°C to +85°C

Mechanical Specification:
- Dimensions: See outline drawing overleaf
- Weight: HV Units See table overleaf. Converter 27kg
- Connections: All connections are mounted on the rear panel.
- Mains Input: High current connector
- HV Output: M5 bush mounted on HV unit

OUTPUTS & ORDERING INFORMATION:

<table>
<thead>
<tr>
<th>Model</th>
<th>Output Voltage (Rated kV max)</th>
<th>Output Current (Rated mA max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OL10K/603</td>
<td>60kV</td>
<td>180mA</td>
</tr>
<tr>
<td>OL10K/803</td>
<td>80kV</td>
<td>120mA</td>
</tr>
<tr>
<td>OL10K/104</td>
<td>100kV</td>
<td>100mA</td>
</tr>
<tr>
<td>OL10K/124</td>
<td>120kV</td>
<td>80mA</td>
</tr>
<tr>
<td>OL10K/144</td>
<td>140kV</td>
<td>65mA</td>
</tr>
<tr>
<td>OL10K/164</td>
<td>160kV</td>
<td>55mA</td>
</tr>
<tr>
<td>OL10K/184</td>
<td>180kV</td>
<td>45mA</td>
</tr>
<tr>
<td>OL10K/204</td>
<td>200kV</td>
<td>40mA</td>
</tr>
</tbody>
</table>

Notes:
- Once a model number has been chosen, please add either P for positive polarity or N for negative polarity.
- Higher voltages are available to special order but at a reduced output power. Please contact our sales department for further details.

Ordering Example:
- Once a model number has been chosen, please add:
  - A Analogue meters
  - D Digital meters
  - B Blank panel - remote control only
  - P Positive polarity
  - N Negative polarity
  - S Surgelimit Resistor, optional

These component power supplies meet the requirements of EC Directive 73/23/EEC (LVD)
10kW HIGH VOLTAGE POWER SUPPLIES

SERIES OL10K

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