

# HITEK POWER OLS10K SERIES

10 KW HIGH VOLTAGE POWER SUPPLIES



The HiTek Power<sup>®</sup> OLS10K series range of single-output high voltage power supplies meets the exacting requirements found in electron-beam, ion-beam, and x-ray systems, as well as ion and chemical vapor deposition, electrostatic precipitation, and other 24/7 production processes.

Designed using the latest power-switching IGBTs to ensure efficient and reliable operation over the full operating range, the OLS10K will give exemplary performance in the most severe of electrical environments. The OLS10K series achieves an exceptionally high packing density for high voltage power supplies of this power level, giving 169 W per liter, 2.7 W per inch<sup>3</sup>.

The 6 U construction allows operation at full power when close mounted in a standard equipment rack, giving significant savings in rack space in large systems. Featuring a proprietary Arc Count and Extinguish (ACE) system for managing systems where load arcing is endemic, the OLS10K series protects both itself and the load from damage that may be caused by excessive arcing while allowing normal operation to continue. The OLS10K series features both analog and remote control (optional RS232) interfaces. A full set of commands is available over the optional RS232 interface to control and monitor the operation of the power supply.

## **PRODUCT HIGHLIGHTS**

- High packing density: 10 kW output power in 6 U rack mounted chassis
- Output voltages from 1 to 80 kV
- Parallel option to give 20 to 100 kW
- High stability
- Exceptional reliability in severe electrical environments
- Arc Count and Extinguish (ACE)
- Full local and remote control and monitoring

- Analog or RS232 remote control
- Voltage or current control
- CE marked for EU LV directive 2006/95/EC
- RoHS compliant to EU directive 2011/65/EU
- Custom options available

## **TYPICAL APPLICATIONS**

- Electron beam
- Ion beam
- X-ray
- Lasers
- HV pulse generator bias
- HV amplifier bias
- Electrostatic precipitation
- Chemical purification

# ELECTRICAL SPECIFICATIONS

Output Power	10 kW max at full rated output voltag	e and current			
Output Voltage	Units available with max output voltages from 1 to 80 kV				
Output Current	Up to 10 A for 1 kV and 125 mA for 80 kV (see table)				
Model	OLS10K	OLS10KC	OLS10KE		
Input Voltage	208 VAC ±10% (187 to 229 VAC) 47 to 63 Hz 3 phase plus protective earth	380 VAC ±10% (342 to 418 VAC) 47 to 63 Hz 3 phase plus protective earth	400 VAC ±10% (360 to 440 VAC) 47 to 63 Hz 3 phase plus protective earth		
Input Current	< 36 A per phase	< 22 A per phase	< 22 A per phase		
Voltage Ripple: Voltage Mode	< 0.05% of rated voltage +2 V, peak to peak or < 0.01% of rated voltage +1 Vrms	< 0.1% of rated voltage +2 V, peak to peak or < 0.02% of rated voltage +1 Vrms	< 0.1% of rated voltage +2 V, peak to peak or < 0.02% of rated voltage +1 Vrms		
Voltage Ripple: Current Mode	< 0.5% of rated voltage peak to peak or < 0.1% of rated voltage rms	< 0.5% of rated voltage peak to peak or < 0.1% of rated voltage rms	< 0.5% of rated voltage peak to peak or < 0.1% of rated voltage rms		
Line Voltage Regulation	< 0.01% +0.5V change in output voltage for a 10% change in line voltage				
Load Voltage Regulation	< 0.01% +0.5 V change in output voltage for 0 to 100% change in load current				
Line Current Regulation	< 0.5% of rated current				
Load Current Regulation	< 0.5% of rated current for 0 to 100% change in output				
Polarity	Positive or negative to order				
Specification Range	Specifications apply above 5% of rated output voltage. The output can be controlled down to < 0.25% of rated output voltage.				
Calibration	Calibration between voltage demand, output voltage, and voltage monitor ±0.2% of setting or ±0.05% of rating, whichever is greater				
Recovery Time	< 200 ms to within 0.1% of previous operating level following a short circuit or arc. Max overshoot 2% of rated output voltage.				
Temperature Coefficient	<100 ppm/°C				
Drift	< 0.01% per hour after 1 h warmup, typically < 0.02% per 8 h after 1 h warmup, at constant load, line, and temperature				
Operating Temperature	0 to 40°C (32 to 140°F)				
Storage Temperature	-20 to 70°C (-4 to 158°F)				
Humidity	80% max relative humidity up to 31°C (88°F), reducing linearly to 50% at 40°C (104°F). Non-condensing				
Altitude	Sea level to 2000 m (6500')				
Installation Category	II (BS EN61010-1)				
Pollution Degree	2 (BS EN61010-1)				
Usage	Indoor use only				
Metering	Provided as part of an alpha-numeric display. Voltages are displayed with a resolution of > 0.5% of rated output. Current is displayed with a resolution of > 1.5% of rated output. Voltage and current set values can be displayed by pressing the relevant control potentiometer.				
Status Indication	Uses the alpha-numeric display to show the reason for any trip condition				
Protection	The units are fully protected against over voltage, over temperature, fan failure, and current limit. Peak arc current is resistively limited.				
Arc Count and Extinguish (ACE)	Each time the ACE system detects an arc, it blanks the supply off for a brief period to extinguish the arc. The unit is then allowed to recover. If more arcs occur they are counted to determine the arc rate; if this exceeds a safe level the power supply is shut down. The parameters are factory set to 25 arcs in any 5 second period.				



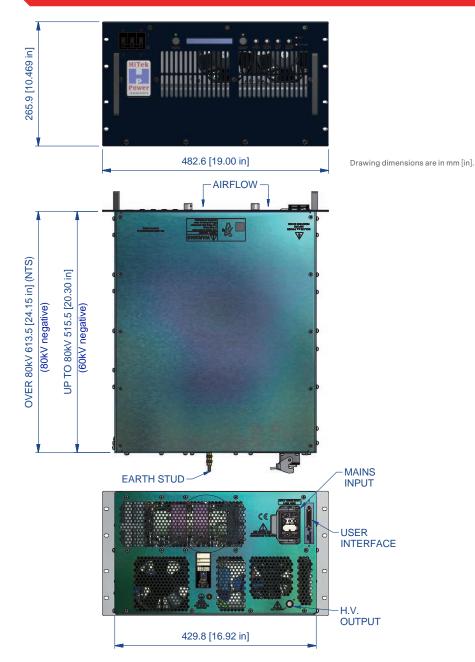
# ELECTRICAL SPECIFICATIONS (CONTINUED)

Safety	The OLS10K series meets the requirements of the Low Voltage Directive (LVD), 2006/95/EC, by complying with BS EN61010-1 when installed as a component part of other equipment. The units are CE marked accordingly. Designed to meet the general requirements of SEMI S2 for electrical safety.	
Safety Class	Equipment Class 1	
Cooling	The unit utilizes forced air cooling. Air is drawn in via the front panel slotted opening and through side panel vents. Ensure that within the rack there is a free air opening with a minimum effective area of 195 cm <sup>2</sup> directly in front of the unit front panel slots. An additional free air opening with a minimum effective area of 195 cm <sup>2</sup> is required for the side vents. Air flow from this additional free air opening to the side vents of the power converter must not be restricted. The expected air flow for each opening is approximately 50 liters per second. The maximum temperature of the air entering the unit must not exceed 40°C. The unit can dissipate up to 2 kW, therefore provision must be made to extract the exhaust air from the rack in order to prevent possible overheating.	
EMC	Intended for installation as a component of a system and designed to meet:	
	EN55022 class B for conducted and radiated emissions	
	EN61000-4-2 ESD - levels ±4 kV contact, 8 kV air discharge	
	EN61000-4-4 fast transients on mains input - levels ±2 kV	
	EN61000-4-5 surges - levels ±2 kV line to earth, ±1 kV line to line	
	EN61000-4-8 magnetic fields - levels 30 A/m at 50/60 Hz	
	EN61000-4-11 voltage dips, interruptions	
	The unit will not trip and recovers to normal operation after a disturbance as defined in SEMI F47-0706.	
	The EMC performance of the power supply can only be fully assessed when installed within, and as part of, the final system.	
RoHS	The OLS10K series meets the requirements of EU Directive 2011/65/EU on the Restriction of use of certain Hazardous Substances (RoHS) in electrical and electronic equipment.	



# **HITEK POWER OLS10K SERIES**

### **MECHANICAL SPECIFICATIONS**



Dimensions	See outline drawing	
Connections	All connections are mounted on the rear panel	
Mains	Harting HAN C, 3 m cable provided	
Safety Earth	M6 stud	
HV Output	Proprietary coaxial connector, 3 m cable provided	
Front Panel	Stoving enamel trimite full gloss S60/9 color blue RAL5011 as standard	
	Blank front panel available to order	

Volumes and Weights				
	kg	lb		
Weight	45	99		

## INTERFACE

#### **Remote Control Interface Connections:**

The OLS10K series is fitted with an analog remote control interface as standard, control is via a 25-way female D-type connector:

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V STATUS INDICATOR I STATUS INDICATOR HV OUTPUT VOLTAGE MONITOR FAULT INDICATOR LOCAL INDICATOR HV ON INDICATOR VOLTAGE DEMAND MONITOR HV ON/OFF CONTROL LO HV ON/OFF CONTROL HI VOLTAGE DEMAND HI VOLTAGE DEMAND LO 0 V MONITOR 0 V

14 HV OUTPUT CURRENT MONITOR

- 15 HV OFF INDICATOR
- 16 REMOTE INDICATOR
- 17 ARC MONITOR INDICATOR
- 18 +10 V REFERENCE VOLTAGE19 NO CONNECTION
- 19 NO CONNECTION 20 NO CONNECTION
- 21 HV ENABLE LO
- 22 HV ENABLE HI
- 23 CURRENT DEMAND LO
- 24 CURRENT DEMAND HI
- 25 NO CONNECTION

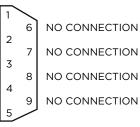
All logical indicators are open collector outputs rated at 16 V (max) in the off state. An internal 100  $\Omega$  resistor is connected in series with the open collector transistor. The pull down voltage is 0.9 V plus the internal resistor drop.

All analog voltage and current monitors are 0 to +10 V  $\pm$ 0.5%  $\pm$ 20 mV, with respect to pin 13, representing 0 to rated output. Signal impedance is < 100  $\Omega$  and minimum external load resistance is 2 k $\Omega$ .

All analog voltage and current inputs are 0 to +10 V on the HI input with respect to the LO input representing 0 V to rated output  $\pm 0.2\%$  of setting  $\pm 0.1\%$  of rating. Input impedance is better than 50 k $\Omega$ .

#### Digital RS232 Remote Control 9-way female D-type connector:

NO CONNECTION TXD TRANSMIT DATA RXD RECEIVE DATA NO CONNECTION SIGNAL GROUND



The OLS10K series is configured as a DCE device. To connect to a PC or other DTE device, use a pin to pin DB9 female to male serial cable.

The communication is set to 9600 Baud, one start bit, one stop bit, and no parity.

The connector shell can be connected to earth and cable screen.

A comprehensive set of commands is available for the control and monitoring of the power supply.



## **ORDERING INFORMATION**

Model No 208 VAC input	Model No 380 VAC input	Model No 400 VAC input	Output Voltage	Output Current	
OLS10K-102*	OLS10KC-102*	OLS10KE-102*	1 kV	10 A	
OLS10K-202*	OLS10KC-202*	OLS10KE-202*	2 kV	5 A	
OLS10K-502*	OLS10KC-502*	OLS10KE-502*	5 kV	2 A	
OLS10K-103*	OLS10KC-103*	OLSK10E-103*	10 kV	1 A	
OLS10K-203*	OLS10KC-203*	OLS10KE-203*	20 kV	500 mA	
OLS10K-303*	OLS10KC-303*	OLS10KE-303*	30 kV	333 mA	
OLS10K-403*	OLS10KC-403*	OLS10KE-403*	40 kV	250 mA	
OLS10K-503*	OLS10KC-503*	OLSK10E-503*	50 kV	200 mA	
OLS10K-603*	OLS10KC-603*	OLSK10E-603*	60 kV	166 mA	
OLS10K-803*	OLS10KC-803*	OLS10KE-803*	80 kV	125 mA	
A1040958-3M0	OLS10K 3M HV Cables				
A1040958-5M0	OLS10K 5M HV Cables				
A1040958-10M	OLS10K 10M HV Cables				

\* Please choose the input voltage required, then add the required suffixes to the appropriate model number (in the order given) to indicate polarity and type of front panel required, as well as whether RS232 control is required:

P Positive polarity

N Negative polarity (80 kV maximum)

B Blank front panel (remote control only)

C RS232 control interface

e.g. OLS10KC-203PBC for a 380 VAC input voltage unit with 20 kV positive polarity with no display or front panel controls (blank front panel), with an RS232 interface.

See separate datasheet on our OLS10KD series for dual voltage range capability with accurate control and low ripple down to 1% of maximum rated output. Other voltages and combinations are available to special order.

For voltages not listed above, please contact our sales team.





Since 1981, Advanced Energy (AE) has perfected how power performs for its customers. For both end users and OEMs, AE's comprehensive portfolio of standard and custom high voltage components precisely match system specifications to deliver unparalleled energy, quality, and performance. Through close customer collaboration, design expertise, application insight, and world-class support, AE creates successful partnerships and enables customers to push the boundaries of innovation and stay ahead of evolving market needs.

#### PRECISION | POWER | PERFORMANCE



Read and understand all documentation before you install, operate, or maintain Advanced Energy high voltage power supplies. Follow all safety instructions and precautions to protect against property damage and serious or possibly fatal bodily injury. Never defeat safety interlocks or grounds.

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Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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