

HITEK POWER OL3000 SERIES

3KW HIGH VOLTAGE POWER SUPPLY



The HiTek Power® OL3000 series range of single output high voltage power supplies was designed as a component power supply for use in a wide range of diverse applications; from X-ray and general laboratory systems, to heavy industrial use as typified by electron beam welding and ion implantation. Designed using the latest power switching IGBTs to ensure efficient and reliable operation over the full operating range, the OL3000 Series will give excellent performance in the most severe of electrical environments.

PRODUCT HIGHLIGHTS

- 3kW of output power
- Output voltages from 1kV to 60kV
- Positive or Negative polarity to order
- OEM version available
- IGBT switch mode technology
- Local or remote operation
- CE Marked for EU LV Directive 73/23/EEC

ELECTRICAL SPECIFICATIONS

Output Power	3kW maximum at full rated output voltage and current
Output Voltage	Units available with maximum output voltages from 1kV to 60kV
Output Current	Up to 3A for 1kV and 50mA for 60kV, see table
Input Voltage	208VAC $\pm 10\%$ (187VAC to 229VAC) 47-63Hz 3 phase plus protective earth
Input Current	Less than 14A per phase
Polarity	Positive or negative to order
Specification Range	Specifications apply above 5% of rated output voltage. The output can be controlled down to less than 0.25% of rated output voltage.
Ripple	Less than 0.1% of rated voltage +2V, peak to peak
Recovery Time	Less than 500ms to within 0.1% of previous operating level following a short circuit or arc. Maximum overshoot 2% of rated output voltage
Temperature Coefficient	Less than 100ppm/ $^{\circ}\text{C}$
Drift	Less than 0.05% per hour after a 1 hour warm up, at constant load, line and temperature
Operating Temperature	0 $^{\circ}\text{C}$ to +40 $^{\circ}\text{C}$
Storage Temperature	-20 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$
Humidity	80% maximum relative humidity up to 31 $^{\circ}\text{C}$, reducing linearly to 50% at 40 $^{\circ}\text{C}$. Non-condensing (ref BS EN61010-1)
Altitude	Sea level up to 2000 metres (6500 feet)
Installation Category	II (BS EN61010-1)
Pollution Degree	2 (BS EN61010-1)
Usage	Indoor use only
Protection	The units are fully protected against over-temperature and overcurrent. Peak arc current is resistively limited.
Arc Count and Extinguish	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.
Cooling	Fan assisted, air is drawn in via side and rear panel vents and exits at the rear of the unit. Minimum airflow required is 3m/s. Ambient air around the unit must not exceed 40 $^{\circ}\text{C}$.
Safety	The Series OL3000 meets the requirements of the Low Voltage Directive, 73/23/EEC, by complying with BS EN61010-1:2001 when installed as a component part of compliant equipment. It is CE marked accordingly.
Safety Class	Equipment Class 1
EMC ¹	EN55022 Class B for conducted and radiated emissions
	EN61000-4-2 ESD - levels $\pm 4\text{kV}$ contact, $\pm 8\text{kV}$ air discharge
	EN61000-4-4 Fast transients on mains input - levels $\pm 2\text{kV}$
	EN61000-4-5 surges - levels $\pm 2\text{kV}$ line to earth, $\pm 1\text{kV}$ line to line
	EN61000-4-8 magnetic fields - levels 30A/m at 50/60Hz
	EN61000-4-11 voltage dips, interruptions
RoHS	The OL3000 is currently built to non-RoHS standard. This unit can, however, be configured to meet the requirements of RoHS where significant customer demand requires it, although please note that this will have an impact on delivery timescales.

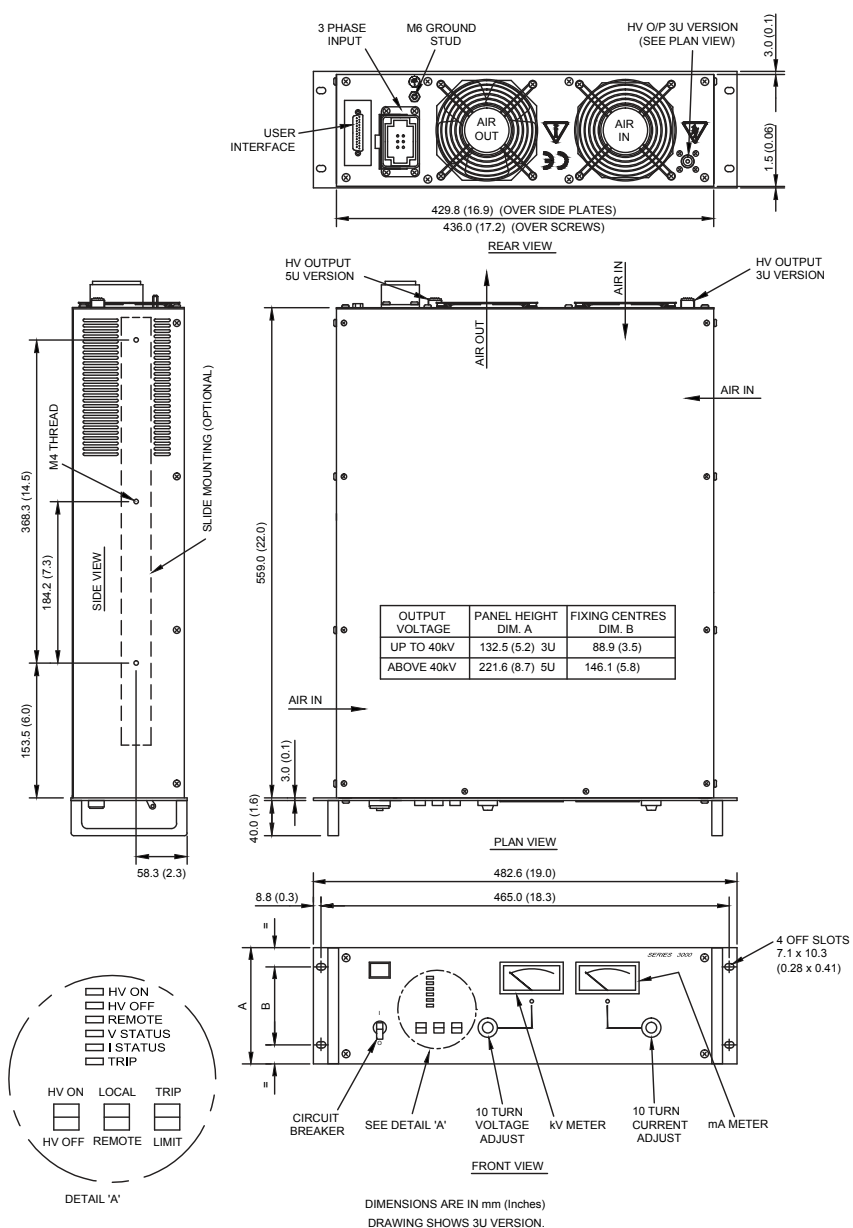
¹ The Series OL3000 is intended for installation as a component of a system and is designed to meet these requirements. The unit will not trip and recovers to normal operation after a disturbance as defined in SEMI F47-0706. The EMC performance of the power supply can only be fully assessed when installed within, and as a part of, the final system.

ELECTRICAL SPECIFICATIONS (CONTINUED)

Voltage Regulation	
Line	Less than 0.1% +0.5V change in output voltage for a 10% change in line voltage
Load	Less than 0.1% +0.5V change in output voltage for 0 to 100% change in load current
Current Regulation	
Line	Less than 0.5% of rated current for a $\pm 10\%$ change in line voltage
Load	Less than 0.5% of rated current for 0 to 100% change in output voltage

MECHANICAL SPECIFICATIONS (CONTINUED)

Dimensions	See outline drawing and table below
Weight	Units up to and including 40kV: 27kg (60 lb)
	Units over 40kV: 37kg (82 lb)
Connections	All connections are mounted on the rear panel
Mains	Harting Han GB
Safety earth	M6 stud
HV output	Proprietary coaxial connector, 2m cable provided
Front panel	Stoving enamel trimite full gloss S60/6 colour cream R87177 as standard



INTERFACE

Remote Control Interface Connections:

The Series OL3000 is fitted with an analogue remote control interface, controlled via a 25-way female D-type connector:

V STATUS INDICATOR	1	14	HV OUTPUT CURRENT IN
I STATUS INDICATOR	2	15	HV OFF INDICATOR
HV OUTPUT VOLTAGE MONITOR	3	16	REMOTE INDICATOR
TRIP INDICATOR	4	17	RESERVED
LOCAL INDICATOR	5	18	+10V REFERENCE VOLTAGE
HV ON INDICATION	6	19	RESERVED
PROGRAM VOLTAGE MONITOR	7	20	RESERVED
HV ON Lo	8	21	ENABLE Lo
HV ON Hi	9	22	ENABLE Hi
PROGRAM VOLTAGE Hi	10	23	CURRENT PROGRAM 0V
PROGRAM VOLTAGE Lo	11	24	CURRENT PROGRAM
0V	12	25	RESERVED
0V	13		

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

All analogue Voltage and Current Monitors are 0V to +10V $\pm 0.5\%$ ± 20 mV, with respect to pin 13, representing 0 to rated output. Signal impedance is less than 100 Ω and minimum external load resistance is 2k Ω .

All analogue Voltage and Current Inputs are 0V to +10V on the Hi input with respect to the Lo input, representing 0V to rated output $\pm 0.2\%$ of setting $\pm 0.1\%$ of rating. Input impedance is greater than 50k Ω .

ORDERING INFORMATION

Model	Output Voltage	Output Current	Unit Height mm (in)
OL3000/102 ¹	1kV	3A	133 (5.25)
OL3000/202 ¹	2kV	1.5A	133 (5.25)
OL3000/502 ¹	5kV	600mA	133 (5.25)
OL3000/103 ¹	10kV	300mA	133 (5.25)
OL3000/203 ¹	20kV	150mA	133 (5.25)
OL3000/303 ¹	30kV	100mA	133 (5.25)
OL3000/403 ¹	40kV	75mA	133 (5.25)
OL3000/503 ¹	50kV	60mA	177 (7.0)
OL3000/603 ¹	60kV	50mA	177 (7.0)

¹ Please add the required suffixes to the part number:

- P Positive polarity or
- N Negative polarity
- A Analogue meters or
- D Digital meters or
- B Blank front panel
- E Encapsulated HV section

eg order part number OL3000/503PBE for a 50kV output voltage positive polarity unit with blank front panel and an encapsulated HV section.



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ABOUT ADVANCED ENERGY

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



CAUTION:
High Voltage

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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