



## FEATURES

- Output Voltages from 1kV to 80kV
- High Packing Density - 600W in 1U (80kV 2U)
- Exceptional Reliability
- Complies with SEMI F47 Standard
- High Stability
- Arc Count and Extinguish (ACE)
- $\text{C} \text{ } \text{E}$  Marked for EU LV Directive 2006/95/EC
- RoHS Compliant to EU Directive 2011/65/EU
- Full Local and Remote Control Monitoring
- Custom Options Available
- Voltage or Current Control

## DESCRIPTION

The HiTek Power Series OL600W range of single output high voltage power supplies meets the exacting requirements found in electron and ion beam systems. The OL600W is also suitable for use in X-ray systems, ion and chemical vapour deposition and general laboratory use.

Designed using the latest power switching IGBTs to ensure efficient and reliable operation over the full operating range the Series OL600W will give excellent performance in the most severe of electrical environments. The Series OL600W utilises air as the primary insulation medium for voltages up to 80kV; achieving a high packing density for high voltage supplies giving 65W/litre, 1W/inch<sup>3</sup>. The 1U construction (2U for 80kV units) allows operation at full power when close mounted in a standard equipment rack, giving significant savings in rack space in large systems. Featuring HiTek Power's proprietary Arc Count and Extinguish (ACE) system for managing systems where load arcing is possible, the Series OL600W protects both itself and the load from damage that may be caused by excessive arcing whilst allowing normal operation to continue.

## SPECIFICATION

### Output Power:

600W maximum at full rated output voltage and current.

### Output Voltage:

Units available with maximum output voltages from 1kV to 80kV.

### Output Current:

Up to 600mA for 1kV and 7.5mA for 80kV, see table.

### Input Voltage:

185VAC to 255VAC or 103VAC to 127VAC (Auto Range Selection). Range does not change after power up. 47-63Hz single phase and earth.

### Input Current:

Not exceeding 6A rms (185VAC to 255VAC).  
 Not exceeding 12A rms (103VAC to 127VAC).

### Polarity:

Positive or Negative to order.

### Specification Range:

Specifications apply above 5% of rated output voltage.

### Voltage Ripple:

Voltage Mode: Less than 0.1% of rated output voltage + 2V, peak to peak  
 or  
 Less than 0.02% of rated output voltage +0.5V, rms.

### Current Mode:

Less than 0.5% of rated output voltage + 2V, peak to peak.  
 or  
 Less than 0.1% of rated output voltage +0.5V, rms.

### Voltage Regulation:

Line: Less than 0.05%  $\pm$ 0.5V change in output voltage for a 10% change in line voltage.

### Load:

Less than 0.05%  $\pm$ 0.5V change in output voltage for 0 to 100% change in load current.

# Series OL600W

## 600W HIGH VOLTAGE POWER SUPPLY



### Current Regulation:

Line: Less than 0.5% of rated output current for a 10% change in line voltage.

Load: Less than 0.5% of rated output current for 0 to 100% change in output voltage.

### 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/°C.

### Drift:

Less than 0.1% in eight hours after three-hour warm-up at constant load, line and temperature.

### Efficiency:

Better than 75%.

### Protection:

Over temperature  
Over voltage  
Fan failure  
Current limit  
Series output resistance

### 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.

### Operating Temperature:

0°C to +40°C (32°F to 140°F).

### Storage Temperature:

-20°C to +70°C (-4°F to 158°F).

### Humidity:

80% maximum relative humidity up to 31°C, reducing linearly to 50% at 40°C. Non-condensing. (ref. BS EN61010-1)

### Altitude:

Sea level to 2000 metres (6500 feet).

### Safety:

Meets the requirements of the Low Voltage Directive, 2006/95/EC, by complying with BS EN61010-1 when installed as a component part of compliant equipment. It is CE marked accordingly.

### Safety Class:

Equipment Class 1.

### Usage:

Indoor use only.

### Installation Category:

II (BS EN61010)

### Pollution Degree:

2 (BS EN61010)

### Portability:

Non-portable.

### EMC:

The Series OL600W is intended for installation as a component of a system.

Designed to meet:

BS EN55022 class B for conducted and radiated emissions  
BS EN61000-4-2 ESD – levels  $\pm 4$ kV contact,  $\pm 8$ kV air discharge  
BS EN61000-4-4 Fast transients on mains input – levels  $\pm 2$ kV  
BS EN61000-4-5 Surges – levels  $\pm 2$ kV line to earth,  $\pm 1$ kV line to line  
BS EN61000-4-8 Magnetic fields – levels 30A/m at 50/60Hz  
BS EN61000-4-11 Voltage dips, interruptions

The unit will not trip and recovers to normal operation after a disturbance as defined in SEMI F47.

The EMC performance of the power supply can only be fully assessed when installed within, and as part of, the final system.

### RoHS:

The Series OL600W meets the requirements of EU Directive 2011/65/EU on the Restriction of use of certain Hazardous Substances in electrical and electronic equipment (RoHS).

### Metering:

Provided as part of an alphanumeric display. Voltages are displayed with a resolution better than 0.5% of rated output. Current is displayed with a resolution of better than 1.5% of rated output. Voltage and current set values can be displayed by pressing the relevant control potentiometer.

### Status Indication:

Uses the alphanumeric display to show the reason for any trip condition.

### Cooling:

Fan assisted with fan fail detection. Air inlets at the rear of the unit, exhaust on the side panels and top cover. Minimum air flow required is 3m/s at the input to the fan.

For slide mounting a 15mm gap shall be provided above the unit for air exhaust if the side air vents are blocked.

For shelf mounting no gap is required above or below the unit provided the side air vents are clear by at least 15mm.

### Mechanical Specification:

Dimensions: See outline drawing

Weight: 6.5kg for units up to 60kV.  
8kg for the 80kV unit.

Connections: All connections are mounted on the rear panel.

Mains: IEC320-C20 16A with integrated two pole switch.

Safety Earth: M5 stud.

HV Output: Proprietary co-axial connector.

Front panel: Stoving enamel trimite full gloss S60/9 colour blue  
 RAL5011 as standard.

### Outputs and Ordering Information:

The standard range of units available is as follows:

Model no	Output Voltage	Output Current
OL600W-102*	1kV	600mA
OL600W-502*	5kV	120mA
OL600W-103*	10kV	60mA
OL600W-203*	20kV	30mA
OL600W-303*	30kV	20mA
OL600W-403*	40kV	15mA
OL600W-503*	50kV	12mA
OL600W-603*	60kV	10mA
OL600W-803*	80kV**	7.5mA

\* Add P for a Positive polarity unit or N for a Negative polarity unit.  
 eg: part number for a 20kV positive unit: OL600W-203P

\*\* 80kV unit utilises an encapsulated HV section and is housed within a 2U chassis.

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

### Interface Connections:

Remote control 25-way female D-type connector:

V STATUS INDICATOR	1	
I STATUS INDICATOR	2	
HV OUTPUT VOLTAGE MONITOR	3	
TRIP INDICATOR	4	
LOCAL INDICATOR	5	
HV ON INDICATION	6	
PROGRAM VOLTAGE MONITOR	7	
HV ON - Lo	8	
HV ON - Hi	9	
PROGRAM VOLTAGE Hi	10	
PROGRAM VOLTAGE Lo	11	
0V	12	
MONITOR 0V	13	
	14	HV OUTPUT CURRENT MONITOR
	15	HV OFF INDICATOR
	16	REMOTE INDICATOR
	17	ARC INDICATOR
	18	+10V REFERENCE VOLTAGE
	19	NO CONNECTION
	20	NO CONNECTION
	21	ENABLE Lo
	22	ENABLE Hi
	23	CURRENT PROGRAM 0V
	24	CURRENT PROGRAM
	25	CURRENT PROGRAM MONITOR

All logical Indicators are open collector outputs rated at 16V (max) in the off state. An internal 100Ω resistor is connected in series with the open collector transistor. The pull down voltage is 0.9V plus the internal resistor drop. The rated current is 10mA.

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

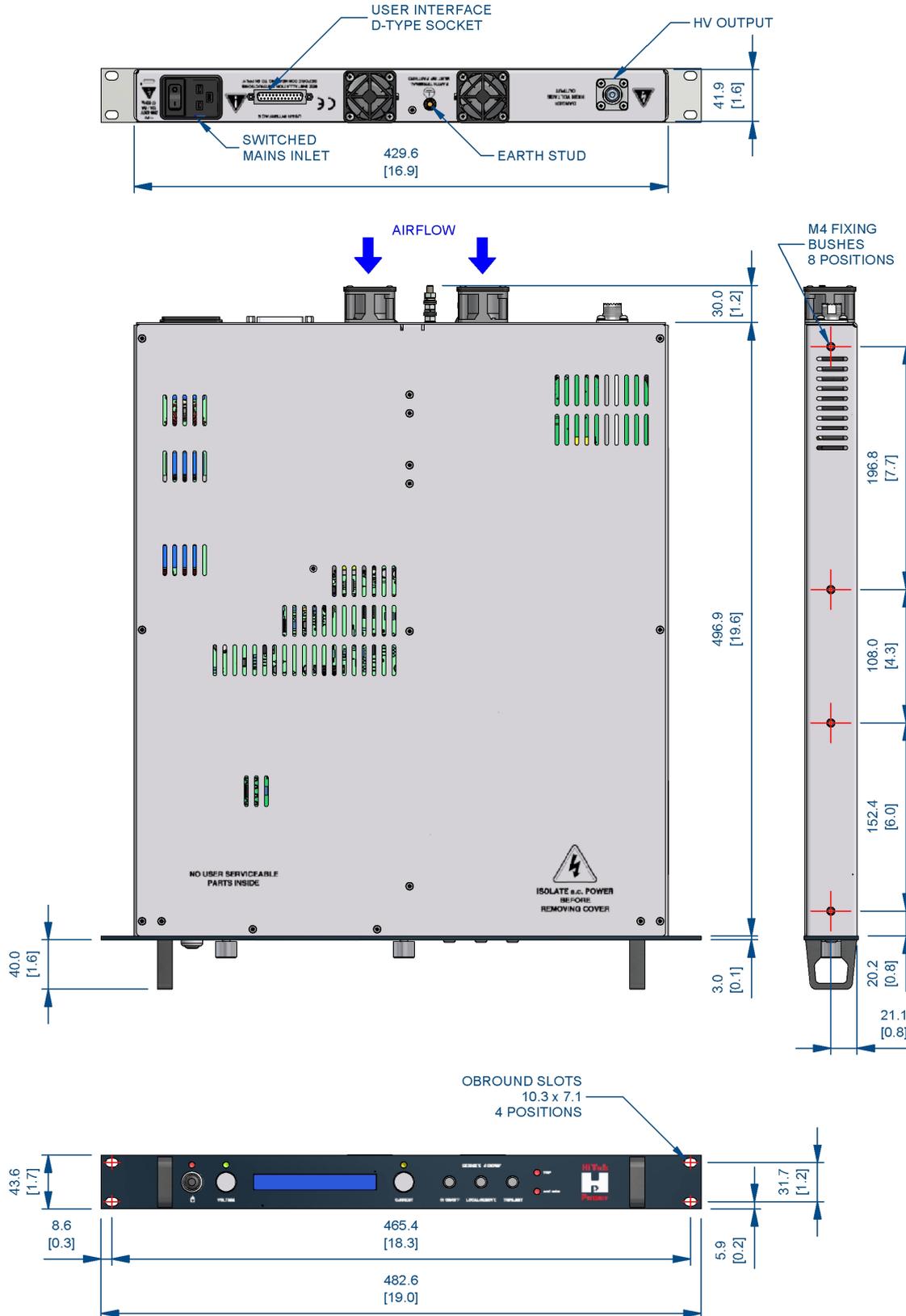
All analogue Voltage and Current inputs are 0V to +10V on the HI input with respect to the LO input representing 0V to rated output ±0.2% of setting ±0.1% of rating. Input impedance greater than 50kΩ.



These component power supplies meet the requirements of EC Directive 2006/95/EC (LVD)

# Series OL600W

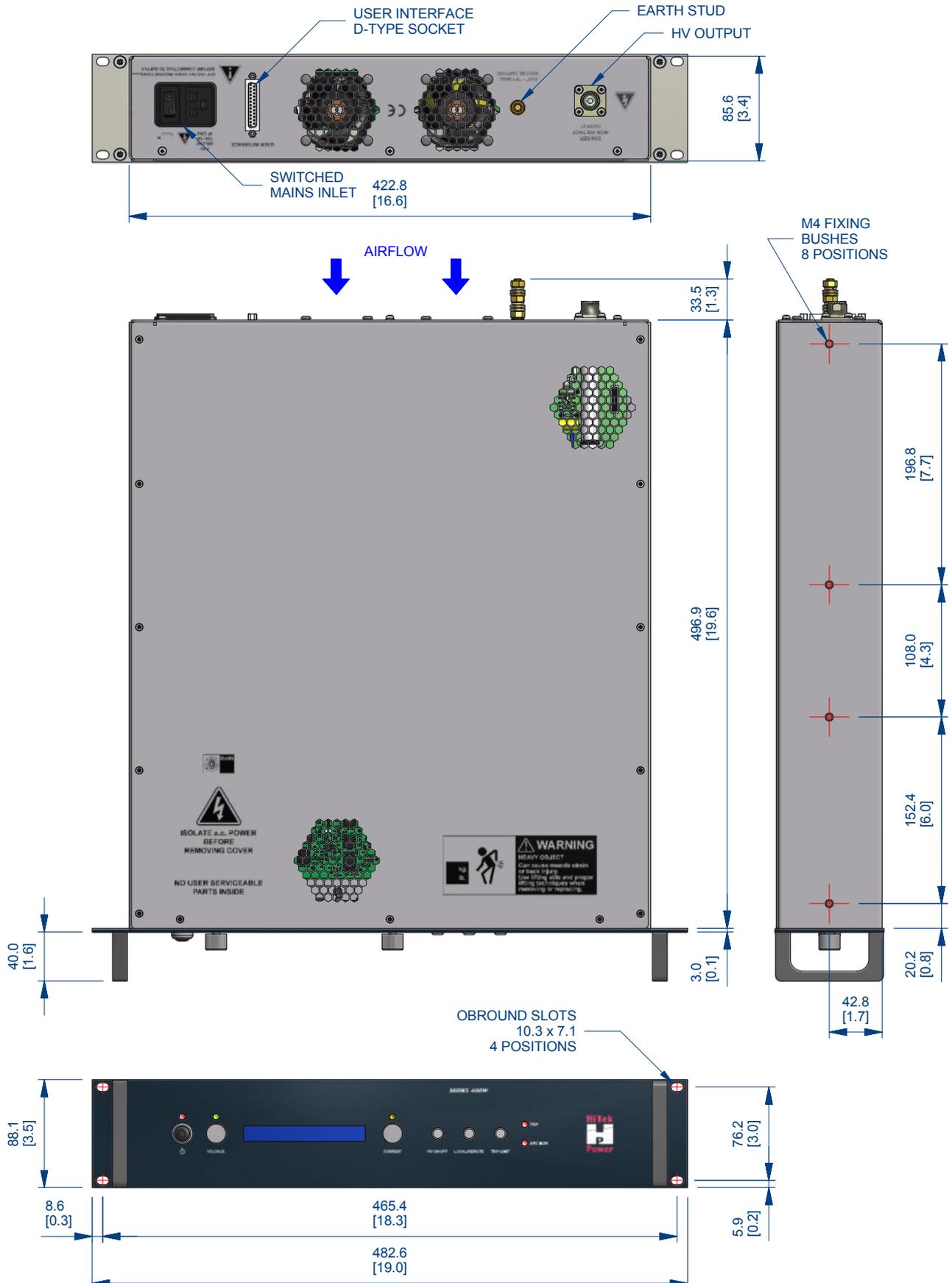
## 600W HIGH VOLTAGE POWER SUPPLY



Drawing dimensions are in mm (inches)  
Design developments may result in specification changes

# Series OL600W

## 600W HIGH VOLTAGE POWER SUPPLY



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# HiTek



# Power

*The Power Supply  
Pioneer*

## **UK**

HiTek Power Ltd  
Hawthorn Road, Littlehampton  
West Sussex BN17 7LT  
UK  
Tel: **+44 (0) 1903 712400**  
Fax: **+44 (0) 1903 712500**  
e-mail: [sales.uk@hitekpower.com](mailto:sales.uk@hitekpower.com)

## **USA**

HiTek Power Inc  
124 Jewett Street, Unit #2  
Georgetown, MA 01833-1868  
USA  
Tel: **+1 (978) 352-9100**  
Fax: **+1 (978) 352-9133**  
e-mail: [sales.us@hitekpower.com](mailto:sales.us@hitekpower.com)

## **GERMANY**

HiTek Power GmbH  
Joh.-Friedr.-Boettger-Str. 21  
D-63322 Roedermark  
Germany  
Tel: **+49 (0) 6074 69285 0**  
Fax: **+49 (0) 6074 69285 10**  
e-mail: [sales.de@hitekpower.com](mailto:sales.de@hitekpower.com)

## **JAPAN**

HiTek Power Japan  
1-5-13 Kyutaroumachi  
Chou-ku, Osaka 541-0056  
Japan  
Tel: **+81 (6) 6271 8180**  
Fax: **+81 (6) 6271 8190**  
e-mail: [info@hitekpowerjapan.co.jp](mailto:info@hitekpowerjapan.co.jp)