Series XR2000
2kW X-RAY POWER SUPPLY

FEATURES

- 2kW of output power
- Extensive tube protection facilities
- Robust IGBT converter design
- Short circuit and overload protection
- High stability
- High accuracy filament control
- Low ripple
- CE Marked for EU LV Directive 73/23/EEC
- RoHS compliant unit available on request

DESCRIPTION

The Series XR2000 is intended as a component power supply for use in industrial X-ray systems, elemental analysis equipment, X-ray diffraction spectrometers and materials process monitoring applications. The Series XR2000 incorporates a switching floating filament supply, allowing use of both large and small focus filament connections within an X-ray tube. The filament supply is automatically controlled by the integral beam loop. Design is based around HiTek Power's proven IGBT converter design, ensuring high efficiency and reliable operation. The Series XR2000 has an RS232 control interface.

If the version you require is not on this datasheet, please contact our Sales Department as we produce many custom versions for specific requirements.

SPECIFICATION

Output Power:
2kW maximum at full rated output voltage and current.

Output Voltage:
0 to -60kV or 0 to -90kV.

Output Current:
60kV unit, 0 to 33mA at 60kV increasing to 45mA maximum at 45kV. Constant power between 45kV and 60kV.
90kV unit, 0 to 22mA at 90kV increasing to 33mA maximum at 60kV. Constant power between 60kV and 90kV.

Input Voltage:
230VAC ±10% (207VAC to 253VAC) 47-63Hz single phase and earth.

Input Current:
Not exceeding 16Arms.

Polarity:
Negative.

Specification Range:
Specifications apply above 5% of rated output voltage and current.

Ripple:
Less than 0.25% of setting plus 0.25% of rating, peak to peak.

Voltage Regulation:

Line:	Less than 0.05% change in output voltage for a 10% change in line voltage.
Static Load:	Less than 0.05% change in output voltage for a 5% to 100% change in output current.
Dynamic Load:	Less than 5% change in output voltage for a 5% to 100% change in output current, recovery to within 0.1% or 45V (whichever is greater) of previous setting within 350ms.

Current Regulation:

Line:	Less than 0.05% change in output current for a 10% change in line voltage.
Load:	Less than 0.05% change in output current for a 60% change in rated output voltage.

Filament Specification:

Voltage:	12VDC maximum. Referenced to the negative output voltage.
Current:	0.5 to 5ADC.

Temperature Coefficient:
Less than 100ppm/°C.

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Protection:
The XR2000 is protected against over-temperature, over-voltage, fan failure detection, filament current limit, power limit and series output resistance.

Drift:
Less than 0.1% of rating over an 8-hour period after 30 minutes warm-up.

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 to +40ºC.

Storage Temperature:
-20 to +70ºC.

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

Altitude:
Sea level to 2000 metres (6500 feet).

Safety:
This power supply meets the requirements of the Low Voltage Directive (LVD), 73/23/EEC, by complying with BS EN61010-1:2001 when installed as a component part of other equipment and 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.

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

EMC:
This power supply is intended for installation as part of a system. Basic EMC filtering is provided.

RoHS:
The XR2000 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 this will have an impact on delivery timescales.

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.

Status Indication:
Uses the alphanumeric display to show the status of the interlock and the reason for any trip condition.

Mechanical:

Dimensions:	See outline drawing.
Weight:	41kg (90lb).

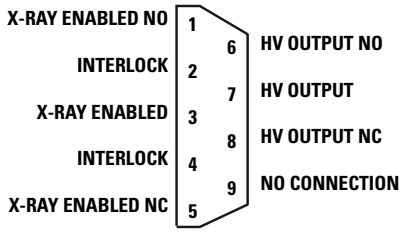
Outputs & Ordering Information:

Model no	Output Voltage	Output Current
XR2000/603	-60kV	-45mA
XR2000/903	-90kV	-33mA

Interface Connection:

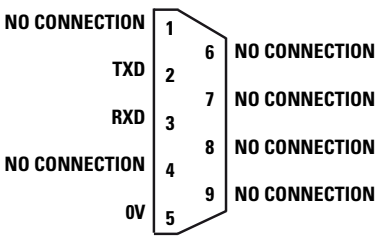
Mains:	Harting Han 6E (mating half supplied).
Safety Earth:	M5 stud.
HV Output:	R24, 100kV receptacle on rear of unit. (Cable available separately.)
	Terminal C: HV output
	Terminal L: Filament (switchable)
	Terminal S: Filament (switchable)

Remote interlock 9-way male D-type connector:



X-ray Enabled and HV Output are both a set of isolated changeover contacts. Interlock is an input; shorting the pins closes the interlock.

Digital remote control 9-way female D-type connector:



RS232 Interface 9600 Baud, 8bit, 1 start, 1 stop, no parity.

CE These component power supplies meet the requirements of EC Directive 73/23/EEC (LVD).

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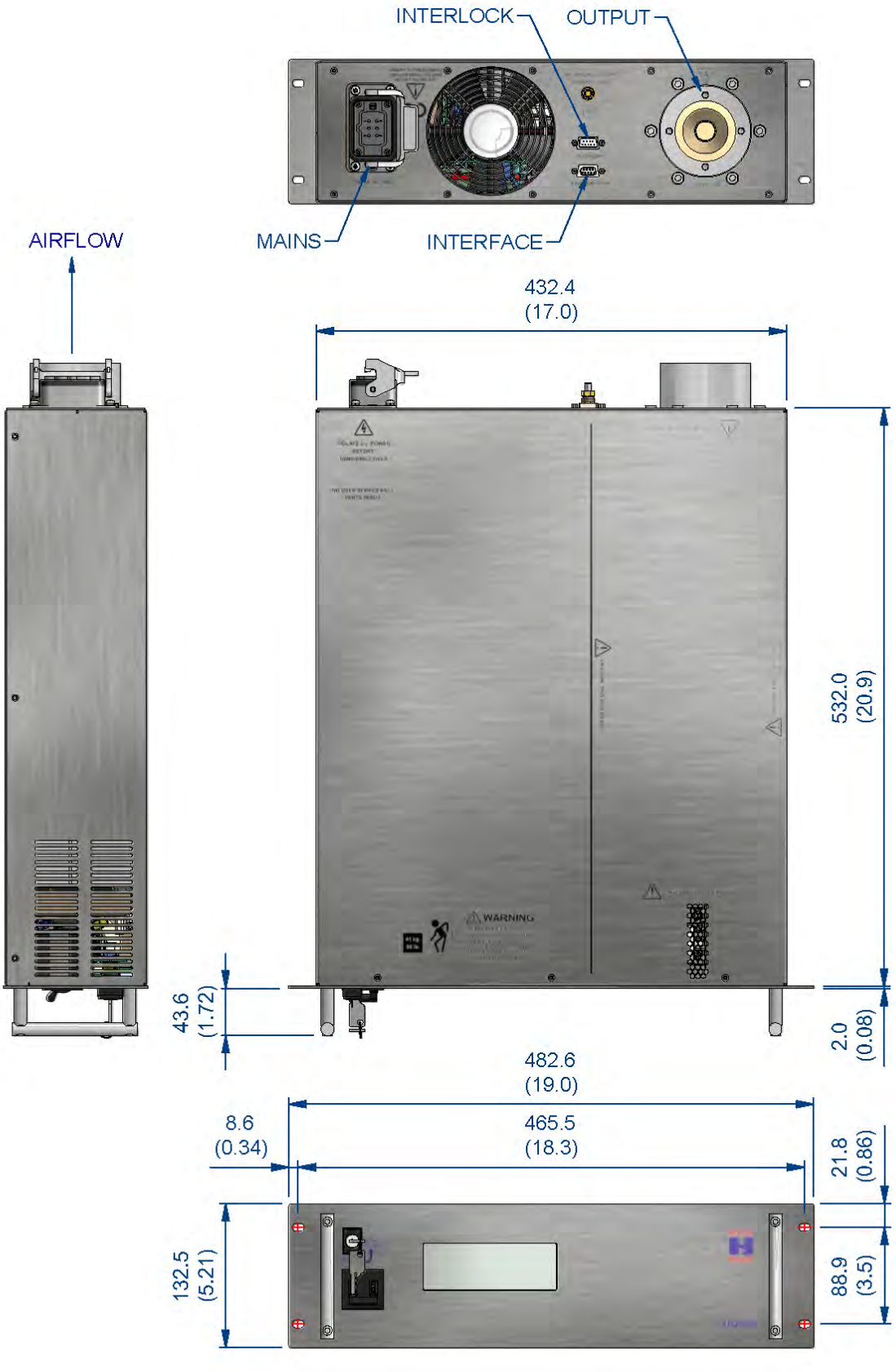

Drawing dimensions are in mm (inches)
Design developments may result in specification changes

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

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

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

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

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